DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
OFFICE ENGINEER
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Flex your power!
Be energy efficient!

May 9, 2012

10-Mer-99-0.0/4.6
10-415804
Project ID 1000000431

Addendum No. 2

Dear Contractor:

This addendum is being issued to the contract for CONSTRUCTION ON STATE HIGHWAY IN MERCED COUNTY NEAR CHOWCHILLA FROM CHOWCHILLA RIVER BRIDGE TO BUCHANAN HOLLOW ROAD.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on Wednesday, May 30, 2012.

This addendum is being issued to revise the Project Plans, the Notice to Bidders and Special Provisions, and the Bid book.

Project Plan Sheets 1, 2, 4, 13, 14, 18, 22, 30, 32, 234, 392, 401, 414, and 424, are revised. Copies of the revised sheets are attached for substitution for the like-numbered sheets.

Project Plan Sheets 393A, 400A, 400B, 400C, 400D, 400E, 400F, 400G, 400H, 400I, 400J, 400K, 400L 400M, 400N, 400O, 400P, 400Q, 473A, 479A, 479B, 490A, 525A, 525B, 525C, 525D, and 525E are added. Copies of the added sheets are attached for addition to the project plans.

In the Notice to Bidders and Special Provisions, in the Registered Persons signature and seal sheet, the signature and seal sheet is added as attached.

In the Notice to Bidders and Special Provisions, in the "STANDARD PLANS LIST," the following Standard Plans are added:

"H3	Planting and Irrigation Details
H4	Planting and Irrigation Details
H6	Planting and Irrigation Details
H10	Irrigation Controller Enclosure Cabinet
ES-3H	Electrical Systems (Electrical Service Irrigation)
RSP H7	Planting and Irrigation Details
RNSP P4	Continuously Reinforced Concrete Pavement
RNSP P31B	Continuously Reinforced Concrete Pavement-Expansion Joint & Anchor Details"

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In the Notice to Bidders, the tenth and eleventh paragraphs are revised as follows:

"Complete the work, excluding plant establishment work, within 560 working days.
Complete the work, including plant establishment work, within 810 working days.
Complete the plant establishment work within 250 working days.

The estimated cost of the project is $58,000,000"

In the Special Provisions, Section 4, "BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES," the first paragraph is revised as follows:

"The 1st working day is (1) the 55th day after contract approval or on December 11, 2012, whichever occurs later."

In the Special Provisions, Section 4, "BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES," the fourth paragraph is revised as follows:

"You may start work at the job site before the 55th day after contract approval or December 11, 2012, if:

1. You obtain required approval for each submittal
2. The Engineer authorizes it in writing"

In the Special Provisions, Section 4, "BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES," the last paragraph is revised as follows:

"Complete the work, except plant establishment work, within 560 working days.
Complete the work, including plant establishment work, within 810 working days."

In the Special Provisions, Section 5-1.11, "PAYMENTS,"the following is added to the list:

"AA. Irrigation System (valves, pipe, sprinklers, and field units)"

In the Special Provisions, Section 5-1.12, "SUPPLEMENTAL PROJECT INFORMATION," is revised as attached.

In the Special Provisions, Section 5-1.21, "DAMAGE REPAIR" and Section 5-1.22, RELIEF FROM MAINTENANCE AND RESPONSIBILITY," are added as attached.

In the Special Provisions, Section 10-1.01, "ORDER OF WORK", the following paragraphs are added after the seventh paragraph:

"During construction of Sandy Mush Overhead (Br No. 39-0236) the contractor shall provide one inch thick by 8 foot wide steel plates at all locations where equipment is required to cross over the Kinder Morgan HP Petroleum Pipeline to gain access to the work site. Full compensation for furnishing, placing, and removing the steel plates, shall be considered as included in the various items of work and no additional compensation will be allowed therefor."

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In the Special Provisions, Section 10-1.01, "ORDER OF WORK", the following paragraphs are added after the twenty-third paragraph:

"Some plants required for this project may not be readily available and may have to be grown specifically for this project. Within 30 days after the contract has been approved, furnish to the Engineer a statement from the vendor that the order for the plants to be grown for this contract, including inspection plants and replacement plants, has been received and accepted by the vendor. The statement from the vendor must include the names, sizes, and quantities of plants ordered and the anticipated dates of delivery. Notify the Engineer in writing when the vendor has started to grow the plants.

At least 60 days before planting the plants, furnish the Engineer a statement from the vendor that the order for the plants required for this contract, including inspection plants, has been received and accepted by the vendor. The statement from the vendor must include the names, sizes, and quantities of plants ordered and the anticipated date of delivery.

Place orders for replacement plants with the vendor at the appropriate time so that the roots of the replacement plants are not in a root-bound condition.

Submittal of working drawings for electrical components must comply with Section 20-5.027B, "Wiring Plans and Diagrams," of the Standard Specifications.

Preinstall irrigation components in the irrigation controller enclosure cabinet before field installation as specified under "Irrigation Controller Enclosure Cabinet" of these special provisions."

In the Special Provisions, Section 10-1.15, "PROGRESS SCHEDULE (CRITICAL PATH METHOD)", is revised as attached:

In the Special Provisions, Section 10-1.16, "TIME-RELATED OVERHEAD", the last paragraph is revised as follows:

"After the work has been completed, except plant establishment work, as provided in Section 20-4.08, "Plant Establishment Work," of the Standard Specifications, the amount of the total contract item price for time-related overhead not yet paid will be included for payment in the first estimate made after completion of roadway construction work, in conformance with the provisions in Section 9-1.07, "Progress Payments," of the Standard Specifications."

In the Special Provisions, Section 10-1.32, "CLEARING AND GRUBBING", the following paragraph is added after the second paragraph:

"All existing stumps and root balls within embankment areas shall be completely removed"

In the Special Provisions, Section 10-1.425, "IRRIGATION SLEEVE", is added as attached.

In the Special Provisions, Section 10-1.555, "CONTINUOUSLY REINFORCED CONCRETE PAVEMENT", is added as attached.

In the Special Provisions, Section 10-2, "BLANK", is deleted.

In the Special Provisions, Section 10-2, "HIGHWAY PLANTING AND IRRIGATION SYSTEMS", is added as attached.

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In the Special Provisions, Section 10-3.01, "DESCRIPTION,"the first paragraph is revised as follows:

"Lighting, closed circuit television systems, changeable message sign system, weather monitoring station, sign illumination, electric service (irrigation), traffic monitoring stations, fiber optic system, microwave vehicle detection system, truck inspection facility electrical work, well pump electrical system, and maintaining existing traffic management system elements during construction shall conform to the provisions in Section 86, "Electrical Systems," of the Standard Specifications and these special provisions."

In the Special Provisions, Section 10-3.16, "ELECTRICAL SERVICE (IRRIGATION)," is revised as follows:

"Electric service (irrigation) shall be from the service points, to the well pump control enclosure, to the irrigation controllers (IC) and to the spaces provided in the irrigation controller enclosure cabinets (CEC) for irrigation controllers as shown on the plans.

Electric service (irrigation) will be paid for on a lump sum basis.

The contract lump sum price paid for electric service (irrigation) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing electric service (irrigation) for irrigation well pump control enclosures and irrigation controllers, complete in place, including conductors, conduit and pull boxes to the pull box adjacent to irrigation controller enclosure cabinets and irrigation controllers, as shown on the plans, as specified in these special provisions, and as directed by the Engineer."

In the Special Provisions, Section 10-3.185, "WELL PUMP ELECTRICAL SYSTEM", is added as attached.

In the Special Provisions, Section 10-4, "IRRIGATION WELL", is added as attached.

In the Bid book, in the "Bid Item List," item 2 and 81 are revised, items 193 to 211 are added, and item 192 is deleted as attached.

To Bid book holders:

Replace pages 3, 7 and 12 of the "Bid Item List" in the Bid book with the attached revised pages 3, 7, 12 and 12A of the Bid Item List. The revised Bid Item List is to be used in the bid.

Inquiries or questions in regard to this addendum must be communicated as a bidder inquiry and must be made as noted in the Notice to Bidders section of the Notice to Bidders and Special Provisions.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the Bid book.

Submit bids in the Bid book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

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This addendum and attachments are available for the Contractors' download on the Web site:

http://www.dot.ca.gov/hq/esc/oe/project_ads_addenda/10/10-415804

If you are not a Bid book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,

REBECCA D. HARNAGEL
Chief, Office of Plans, Specifications & Estimates
Office Engineer
Division of Engineering Services

Attachments

CONTRACT NO. 10-415804

The special provisions contained herein have been prepared by or under the direction of the following Licensed Person.

LANDSCAPE

Edward A. Hibbs

LICENSED LANDSCAPE ARCHITECT

5-1.12 SUPPLEMENTAL PROJECT INFORMATION

The Department makes the following supplemental project information available:

Supplemental Project Information

Means	Description
Included in the Information Handout	1. Foundation Recommendations dated March 4, 2009 for: A Sandy Mush OH (Br No 39-0236) B. Plainsburg OC (Br No 39-0237) C. Dutchman Crk Br (Br No 39-0238R/L) D. Dutchman Creek Br (East Frontage Road) (Br No 39-0239) 2. Foundation Reviews dated March 8, 2010 A. South Dutchman Creek Br (Br No 39-0240 R/L) 3. Geotechnical Design Report – Basins and Local Borrow Material for Embankment/Fill for EA 10-415800, dated January 26, 2004. 4. Addendum to Geotechnical Design Report – CMS, Overhead Signs, and Fill Slope for EA 10-415800, dated September 10, 2009. 5. United States Fish and Wildlife Service – Biological and Conference Opinion. 6. Merced County – Well Construction & Destruction – Application & Permit. PENDING PERMITS 7. California Regional Water Quality Control Board 401 Certification 8. Handling Portland Cement Concrete Pavement Grindings
Available at: http://www.dot.ca.gov/hq/esc/oe/weekly-ads/index.php	Cross section, PDF format and 2D dgn format Original ground data, 3D dgn format Horizontal geometric alignment, TXT format Vertical geometric alignment, TXT format

5-1.21 DAMAGE REPAIR

Attention is directed to Section 7-1.16, "Contractor's Responsibility for the Work and Materials," and Section 7-1.165, "Damage by Storm, Flood, Tsunami or Earthquake," of the Standard Specifications and these special provisions.

When as a result of freezing conditions (as defined herein) during the plant establishment period, plants have died or, in the opinion of the Engineer, have deteriorated to a point beyond which the plants will not mature as typical examples of their species, the Engineer may direct replacement of the affected plants. The total cost of ordered plant replacement work will be paid for as extra work as provided in Section 4-1.03D,"Extra Work," of the Standard Specifications. A freezing condition, for the purpose of this specification, occurs when the temperature at or near the affected area has been officially recorded below 32° F and plants have been killed or damaged to the degree described above.

When, as a result of drought conditions (as defined herein) during the plant establishment period, plants have died or, in the opinion of the Engineer, have deteriorated to a point beyond which the plants will not mature as typical examples of their species, the Engineer may direct replacement of the affected plants. The total cost of ordered plant replacements, after water has been restricted or stopped, will be paid for as extra work as provided in Section 4-1.03D,"Extra Work," of the Standard Specifications. Restriction or shutoff of available water shall not relieve the Contractor from performing other contract work. A drought condition occurs when the Department, or its supplier, restricts or stops delivery of water to the Contractor to the degree that plants have died or deteriorated as described above.

When the provisions in Section 7-1.165, "Damage by Storm, Flood, Tsunami or Earthquake," of the Standard Specifications are applicable, the provisions above for payment of costs for repair of damage due to rain, freezing conditions and drought shall not apply.

5-1.22 RELIEF FROM MAINTENANCE AND RESPONSIBILITY

The Contractor may be relieved of the duty of maintenance and protection for those items not directly connected with plant establishment work in conformance with the provisions in Section 7-1.15, "Relief From Maintenance and Responsibility," of the Standard Specifications. Water pollution control, maintain existing planted areas, maintain existing irrigation facilities, transplant trees, and transplant palm trees shall not be relieved of maintenance.

10-1.1.15 PROGRESS SCHEDULE (CRITICAL PATH METHOD)

SUMMARY

Comply with Section 8-1.04, "Progress Schedule," of the Standard Specifications except you must use computer software to prepare the schedule.

You are responsible for assuring that all activity sequences are logical and that each schedule shows a coordinated plan for complete performance of the work.

DEFINITIONS

contract completion date: Current extended date for completion of the contract shown on the Weekly Statement of Working Days furnished by the Engineer as specified in Section 8-1.06, "Time of Completion," of the Standard Specifications.

data date: Day after the date through which a schedule is current. Everything occurring earlier than the data date is as-built and everything on or after the data date is planned.

early completion time: Difference in time between an early scheduled completion date and the contract completion date.

float: Difference between the earliest and latest allowable start or finish times for an activity.

milestone: Event activity that has zero duration and is typically used to represent the beginning or end of a certain stage of the project.

narrative report: Document submitted with each schedule that discusses topics related to project progress and scheduling.

near critical path: Chain of activities with total float exceeding that of the critical path but having no more than 10 working days of total float.

State-owned float activity: Activity documenting time saved on the critical path by actions of the State. It is the last activity prior to the scheduled completion date.

time impact analysis: Schedule and narrative report developed specifically to demonstrate what effect a proposed change or delay has on the current scheduled completion date.

time-scaled network diagram: Graphic depiction of a CPM schedule comprised of activity bars with relationships for each activity represented by arrows. The tail of each arrow connects to the activity bar for the predecessor and points to the successor.

total float: Amount of time that an activity or chain of activities can be delayed before extending the scheduled completion date.

GENERAL REQUIREMENTS

Submit baseline, monthly updated, and final updated schedules, each consistent in all respects with the time and order of work requirements of the contract. Perform work in the sequence indicated on the current accepted schedule.

Each schedule must show:

1. Calculations using the critical path method to determine controlling activities.
2. Duration activities less than 20 working days.
3. At least 50 but not more than 500 activities, unless authorized. The number of activities must be sufficient to assure adequate planning of the project, to permit monitoring and evaluation of progress, and to do an analysis of time impacts.
4. Each required constraint. Constraints other than those required by the special provisions may be included only if authorized.
5. State-owned float as the predecessor activity to the scheduled completion date.
6. Activities with identification codes for responsibility, stage, work shifts, location, and contract pay item numbers.

You may show early completion time on any schedule provided that the requirements of the contract are met. Early completion time is considered a resource for your exclusive use. You may increase early completion time by improving production, reallocating resources to be more efficient, performing sequential activities concurrently, or by completing activities earlier than planned. You may also submit for approval a VECP as specified in Section 4-1.035B, "Value Engineering Change Proposal." of the Standard Specifications that will reduce time of construction.

You may show a scheduled completion date that is later than the contract completion date on an update schedule, after the baseline schedule is accepted. Provide an explanation for a late scheduled completion date in the narrative report that is included with the schedule.

State-owned float is considered a resource for the exclusive use of the State. The Engineer may accrue State-owned float by the early completion of review of any type of required submittal when it saves time on the critical path. Prepare a time impact analysis, when requested by the Engineer, to determine the effect of the action as specified in "Time Impact Analysis." The Engineer documents State-owned float by directing you to update the State-owned float activity on the next updated schedule. Include a log of the action on the State-owned float activity and include a discussion of the action in the narrative report. The Engineer may use State-owned float to mitigate past, present, or future State delays by offsetting potential time extensions for contract change orders.

The Engineer may adjust contract working days for ordered changes that affect the scheduled completion date as specified in Section 4-1.03, "Changes," of the Standard Specifications. Prepare a time impact analysis to determine the effect of the change as specified in "Time Impact Analysis" and include the impacts acceptable to the Engineer in the next updated schedule. Changes that do not affect the controlling operation on the critical path will not be considered as the basis for a time adjustment. Changes that do affect the controlling operation on the critical path will be considered by the Engineer in decreasing time or granting an extension of time for completion of the contract. Time extensions will only be granted if the total float is absorbed and the scheduled completion date is delayed 1 or more working days because of the ordered change.

The Engineer's review and acceptance of schedules does not waive any contract requirements and does not relieve you of any obligation or responsibility for submitting complete and accurate information. Correct rejected schedules and resubmit them within 7 days of notification by the Engineer, at which time a new review period of 7 days will begin.

Errors or omissions on schedules do not relieve you from finishing all work within the time limit specified for completion of the contract. If, after a schedule has been accepted by the Engineer, either you or the Engineer discover that any aspect of the schedule has an error or omission, you must correct it on the next updated schedule.

COMPUTER SOFTWARE

Submit a description of your proposed schedule software for authorization. All software must be compatible with the current version of the Windows operating system in use by the Engineer. The schedule software must include the latest version of Oracle Primavera P6 Professional Project Management for Windows, or equivalent.

If schedule software equivalent to P6 is proposed, it must be capable of:

1. Generating files that can be imported into P6
2. Comparing 2 schedules and providing reports of changes in activity ID, activity description, constraints, calendar assignments, durations, and logic ties

NETWORK DIAGRAMS, REPORTS, AND DATA

Include the following with each schedule submittal:

1. 2 sets of originally plotted, time-scaled network diagrams
2. 2 copies of a narrative report
3. 1 read-only compact disk or floppy diskette containing the schedule data

The time-scaled network diagrams must conform to the following:

1. Show a continuous flow of information from left to right
2. Be based on early start and early finish dates of activities
3. Clearly show the primary paths of criticality using graphical presentation
4. Be prepared on 34" x 44"
5. Include a title block and a timeline on each page

The narrative report must be organized in the following sequence with all applicable documents included:

1. Transmittal letter
2. Work completed during the period
3. Identification of unusual conditions or restrictions regarding labor, equipment or material; including multiple shifts, 6-day work weeks, specified overtime or work at times other than regular days or hours
4. Description of the current critical path
5. Changes to the critical path and scheduled completion date since the last schedule submittal
6. Description of problem areas
7. Current and anticipated delays:

    7.1. Cause of delay
    7.2. Impact of delay on other activities, milestones, and completion dates
    7.3. Corrective action and schedule adjustments to correct the delay

8. Pending items and status thereof:

    8.1. Permits
    8.2. Change orders
    8.3. Time adjustments
    8.4. Noncompliance notices

9. Reasons for an early or late scheduled completion date in comparison to the contract completion date

Schedule submittals will only be considered complete when all documents and data have been submitted as described above.

PRECONSTRUCTION SCHEDULING CONFERENCE

Schedule a preconstruction scheduling conference with your project manager and the Engineer within 15 days after contract approval. The Engineer will conduct the meeting and review the requirements of this section with you.

Submit a general time-scaled logic diagram displaying the major activities and sequence of planned operations and be prepared to discuss the proposed work plan and schedule methodology that comply with the requirements of this section. If you propose deviations to the construction staging, then the general time-scaled logic diagram must also display the deviations and resulting time impacts. Be prepared to discuss the proposal.

At this meeting, also submit the alphanumeric coding structure and activity identification system for labeling work activities. To easily identify relationships, each activity description must indicate its associated scope or location of work by including such terms as quantity of material, type of work, bridge number, station to station location, side of highway (such as left, right, northbound, southbound), lane number, shoulder, ramp name, ramp line descriptor, or mainline.

The Engineer reviews the logic diagram, coding structure, and activity identification system, and provide any required baseline schedule changes to you for implementation.

BASELINE SCHEDULE

Beginning the week following the preconstruction scheduling conference, meet with the Engineer weekly to discuss schedule development and resolve schedule issues until the baseline schedule is accepted.

Submit a baseline schedule within 20 days of contract approval. Allow 20 days for the Engineer's review after the baseline schedule and all support data are submitted.

The baseline schedule must include the entire scope of work and how you plan to complete all work contemplated. The baseline schedule must show the activities that define the critical path. Multiple critical paths and near-critical paths must be kept to a minimum. A total of not more than 50 percent of the baseline schedule activities must be critical or near critical, unless otherwise authorized.

The baseline schedule must not extend beyond the number of contract working days. The baseline schedule must have a data date of contract approval. If you start work before contract approval, the baseline schedule must have a data date of the 1st day you performed work at the job site.

If you submit an early completion baseline schedule that shows contract completion in less than 85 percent of the contract working days, the baseline schedule must be supplemented with resource allocations for every task activity and include time-scaled resource histograms. The resource allocations must be shown to a level of detail that facilitates report generation based on labor crafts and equipment classes for you and your subcontractors. Use average composite crews to display the labor loading of on-site construction activities. Optimize and level labor to reflect a reasonable plan for accomplishing the work of the contract and to assure that resources are not duplicated in concurrent activities. The time-scaled resource histograms must show labor crafts and equipment classes to be used. The Engineer may review the baseline schedule activity resource allocations using Means Productivity Standards or equivalent to determine if the schedule is practicable.

UPDATED SCHEDULE

Submit an updated schedule and meet with the Engineer to review contract progress, on or before the 1st day of each month, beginning 1 month after the baseline schedule is accepted. Allow 15 days for the Engineer's review after the updated schedule and all support data are submitted, except that the review period will not start until the previous month's required schedule is accepted. Updated schedules that are not accepted or rejected within the review period are considered accepted by the Engineer.

The updated schedule must have a data date of the 21st day of the month or other date established by the Engineer. The updated schedule must show the status of work actually completed to date and the work yet to be performed as planned. Actual activity start dates, percent complete, and finish dates must be shown as applicable. Durations for work that has been completed must be shown on the updated schedule as the work actually occurred, including Engineer submittal review and your resubmittal times.

You may include modifications such as adding or deleting activities or changing activity constraints, durations, or logic that do not (1) alter the critical path(s) or near critical path(s) or (2) extend the scheduled completion date compared to that shown on the current accepted schedule. Justify in writing the reasons for any changes to planned work. If any proposed changes in planned work will result in (1) or (2) above, then submit a time impact analysis as specified in this section.

TIME IMPACT ANALYSIS

Submit a written time impact analysis (TIA) with each request for adjustment of contract time, or when you or the Engineer consider that an approved or anticipated change may impact the critical path or contract progress.

The TIA must illustrate the impacts of each change or delay on the current scheduled completion date or internal milestone, as appropriate. The analysis must use the accepted schedule that has a data date closest to and before the event. If the Engineer determines that the accepted schedule used does not appropriately represent the conditions before the event, the accepted schedule must be updated to the day before the event being analyzed. The TIA must include an impact schedule developed from incorporating the event into the accepted schedule by adding or deleting activities, or by changing durations or logic of existing activities. If the impact schedule shows that incorporating the event modifies the critical path and scheduled completion date of the accepted schedule, the difference between scheduled completion dates of the two schedules must be equal to the adjustment of contract time. The Engineer may construct and use an appropriate project schedule or other recognized method to determine adjustments in contract time until you provide the TIA.

Submit 2 copies of your TIA within 20 days of receiving a written request for a TIA from the Engineer. Allow the Engineer 15 days after receipt to review the submitted TIA. All approved TIA schedule changes must be shown on the next updated schedule.

If a TIA you submit is rejected, meet with the Engineer to discuss and resolve issues related to the TIA. If clarification is still needed, you are allowed 15 days to submit a protest as specified in Section 5-1.011, "Protests," of the Standard Specifications. If agreement is not reached, you are allowed 5 days from the date you receive the Engineer's response to your protest to submit an Initial Potential Claim Record as specified in Section 5-1.146B, "Initial Potential Claim Record," of the Standard Specifications. Only show actual as-built work, not unapproved changes related to the TIA, in subsequent updated schedules. If agreement is reached at a later date, approved TIA schedule changes must be shown on the next updated schedule. The Engineer withholds remaining payment on the schedule bid item if a TIA is requested and not submitted within 20 days. The schedule item payment resumes on the next estimate after the requested TIA is submitted. No other contract payment is withheld regarding TIA submittals.

FINAL UPDATED SCHEDULE

Submit a final update, as-built schedule with actual start and finish dates for the activities, within 30 days after completion of contract work. Provide a written certificate with this submittal signed by your project manager or an officer of the company stating, "To my knowledge and belief, the enclosed final update schedule reflects the actual start and finish dates of the actual activities for the project contained herein." An officer of the company may delegate in writing the authority to sign the certificate to a responsible manager.

PAYMENT

Progress schedule (critical path method) will be paid for at a lump sum price. The contract lump sum price paid for progress schedule (critical path method) includes full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all the work involved in preparing, furnishing, and updating schedules, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Payments for the progress schedule (critical path method) bid item will be made progressively as follows:

1. A total of 25 percent of the item amount will be paid upon achieving all of the following:

    1.1. Completion of 5 percent of all contract item work.
    1.2. Acceptance of all schedules and approval of all TIAs required to the time when 5 percent of all contract item work is complete.

2. A total of 50 percent of the item amount will be paid upon completion of 25 percent of all contract item work and acceptance of all schedules and approval of all TIAs required to the time when 25 percent of all contract item work is complete.
3. A total of 75 percent of the item amount will be paid upon completion of 50 percent of all contract item work and acceptance of all schedules and approval of all TIAs required to the time when 50 percent of all contract item work is complete.
4. A total of 100 percent of the item amount will be paid upon completion of all contract item work, acceptance of all schedules and approval of all TIAs required to the time when all contract item work is complete, and submittal of the certified final update schedule.

If you fail to complete any of the work or provide any of the schedules required by this section, the Engineer makes an adjustment in compensation as specified in Section 4-1.03C, "Changes in Character of Work," of the Standard Specifications for the work not performed. Adjustments in compensation for schedules will not be made for any increased or decreased work ordered by the Engineer in submitting schedules.

10-1.425 IRRIGATION SLEEVE

Irrigation sleeves shall be polyvinyl chloride (PVC) plastic pipe and shall conform to the provisions in Section 20-2.15B(1), "Plastic Pipe Supply Line," of the Standard Specifications and these special provisions.

Irrigation sleeves less than 6 inches in diameter shall have a pressure rating (PR) 315.

Irrigation sleeves 6 inches or larger in diameter shall be Schedule 40.

Fittings shall be Schedule 40.

Irrigation sleeves shall be installed where shown on the plans.

Irrigation sleeves shall be installed not less than 1.5 feet below finished grade measured to the top of the sleeve. Sleeves shall extend 6 inches beyond paving. The ends of the sleeve shall be capped until use.

Quantities of irrigation sleeve to be paid will be determined from the slope length designated by the Engineer. Irrigation sleeve placed in excess of the lengths designated will not be paid for.

The contract price paid per linear foot for irrigation sleeve shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in irrigation sleeve, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.555 CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

GENERAL

Summary

This work includes constructing continuously reinforced concrete pavement.
Comply with Section 40, "Concrete Pavement," of the Standard Specifications.

Submittals

If epoxy-coated steel is used in continuously reinforced concrete pavement, submit a copy of the certification for each plant used.

Fabricate test specimens from a single sample of concrete for coefficient of thermal expansion testing under AASHTO T 336. Submit 4 test specimens for assurance testing.

Submit all your coefficient of thermal expansion data at the Web site:
http://169.237.179.13/cte/

Quality Control and Assurance

General

Perform coefficient of thermal expansion testing under AASHTO T 336 at a frequency of 1 test for each 5,000 cubic yards of paving but not less than 1 test for projects with less than 5,000 cubic yards of CRCP. This test is not going to be used for acceptance.

Prepaving Conference

Meet with the Engineer at a prepaving conference at a mutually agreed time and place. The conference facility must be within 3 miles of the job site. Discuss methods of performing the production and paving work.

Prepaving conference attendees must sign an attendance sheet provided by the Engineer. The prepaving conference must be attended by your:

1. Project superintendent
2. Quality control manager
3. Paving construction foreman
4. Subcontractor's workers including:

    4.1. Foremen
    4.2. Concrete plant manager
    4.3. Concrete plant operator
    4.4. Personnel performing saw cutting and joint sealing

Do not start paving activities including test strips until the listed personnel have attended a prepaving conference.

Test Strips

The first paving activity must be to construct a test strip:

1. 700 to 1,000 feet long
2. Same width as the planned paving
3. With the same equipment used for the planned paving

The Engineer evaluates the test strip for compliance with the specifications for Engineer's acceptance.
The Engineer selects from 3 to 6 core locations per test strip.
Allow the Engineer 3 days to evaluate the test strip for:

1. Smoothness
2. Reinforcement alignment
3. Thickness
4. Final finishing except coefficient of friction is not evaluated

During the 3 day evaluation, the Engineer rejects a test strip if any of the following occurs:

1. Surface varies more than 0.02 feet from a straightedge's lower edge
2. Wheel path's individual high points are greater than 0.025 feet in 25 feet
3. Reinforcement does not comply with specified placement tolerances
4. Pavement thickness deficiency is greater than 0.05 feet
5. Final finishing does not comply with the specifications

Remove the test strip if the Engineer rejects it for noncompliance with the specifications for thickness or reinforcement alignment. Dispose of rejected test strip material under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

If the Engineer rejects the test strip for noncompliance with smoothness or final finishing specifications, you may grind the test strip into compliance if you intend to leave it as part of the paving.

If the Engineer accepts the test strip, you may start production paving while the Engineer continues to evaluate the test strip for compliance with the other specifications. If the Engineer rejects the test strip for noncompliance with the other specifications, stop production paving until you construct a test strip the Engineer accepts.

For rejected test strips, submit a plan for changed materials, methods, or equipment before constructing additional test strips. Construct additional test strips until the Engineer accepts one.

Construct additional test strips if you:

1. Propose different paving equipment including:

    1.1. Paver
    1.2. Dowel bar inserter
    1.3. Tie bar inserter
    1.3. Tining
    1.4. Curing equipment

2. Change concrete mix

You may request authorization to eliminate the test strip if you use paving equipment and personnel from a Department project (1) for the same type of pavement and (2) completed within the past 12 months. Submit supporting documents and previous project information with your request.

MATERIALS

Concrete

Concrete for terminal joints and pavement anchors must comply with the specifications for concrete for continuously reinforced concrete pavement.

For field qualification, perform coefficient of thermal expansion testing under AASHTO T 336. The coefficient of thermal expansion must not exceed 6.0 microstrain/degree Fahrenheit.

Transverse Bar Assembly

You may use transverse bar assemblies to support longitudinal reinforcement instead of transverse reinforcement and other support devices.

Wire for transverse bar assemblies must be welded under Section 7.4 of ASTM A 185/A 185M. For clips use a minimum W5 wire size number under ASTM A 82/A 82M. For chairs use a minimum W2 wire size number under ASTM A 82/A 82M1.

Bar reinforcement for transverse bar assemblies must comply with Section 40-2.10 of the Standard Specifications and these special provisions..

Tack Coat

Tack coat must comply with Section 39, "Hot Mix Asphalt," of the Standard Specifications.

Expansion Joints

Joint seals for transverse expansion joints and must comply with Section 51-1.12F, "Sealed Joints," of the Standard Specifications.

Expanded polystyrene for transverse expansion joints must comply with Section 51-1.12D, "Sheet Packing, Preformed Pads and Board Fillers," of the Standard Specifications.

Terminal Joints

For terminal joints (Type D) and (Type E), joint seals must be Type C.

CONSTRUCTION

Anchorages

Class 1 permeable material, filter fabric, and slotted plastic pipe crossdrain for pavement anchors must comply with Section 68-3, "Edge Drains," of the Standard Specifications.

Transition Joints With Hot Mix Asphalt

If a joint between concrete pavement and hot mix asphalt is specified, apply tack coat between the concrete pavement and hot mix asphalt.

Longitudinal Contraction Joints

Longitudinal contraction joints must be Type A2.

Transverse Contraction Joints

Bar Reinforcement

Place bar reinforcement under section 52-1.07, "Placing" of the Standard Specifications except you may request to use plastic chairs. Plastic chairs will only be considered for support directly under the transverse bars. Your request to use plastic chairs must include a sample of the plastic chair, the manufacturer's written recommendations for the applicable use and load capacity, chair spacing, and your calculation for the load on a chair for the area of bar reinforcement sitting on it. Vertical and lateral stability of the bar reinforcement and plastic chairs must be demonstrated during construction of the test strip. Obtain authorization before using the proposed plastic chairs for work after the test strip is accepted.

For transverse bar reinforcement in a curve with a radius under 2,500 feet, place the reinforcement in a single continuous straight line across the lanes and aligned with the radius point. Place tie bars on the same alignment as the transverse bar reinforcement. If the curve does not allow the specified spacing between transverse bar reinforcement and tie bars, space them a distance that is between one half the specified spacing and the specified spacing.

Construction Joints

Transverse construction joints must be perpendicular to the lane line. Construct joints to allow for lap splices of the longitudinal bar reinforcement. Comply with the lap splice lengths shown for CRCP.

Clean construction joint surfaces before placing fresh concrete against the joint surfaces. Remove surface laitance, curing compound, and other foreign materials.

Repair, Removal, and Replacement

Requirements for repair of cracks under section 40-1.03Q(3) do not apply to CRCP.

If the Engineer orders removal of continuously reinforced concrete pavement, remove it to full depth. Cut transverse saw cuts normal to the lane line. Fill saw cuts extending beyond the removal limits with grout. Make a partial second saw cut just above the longitudinal bar reinforcement 2 feet from the full depth saw cut. The remaining pavement below the bar reinforcement must be removed by chipping the pavement manually. Do not damage the bar reinforcement. Leave the pavement face inclined no more than 1:12 (horizontal:vertical) into the removal area. Place additional bars and tie them to the longitudinal bar reinforcement. Fill the removed CRCP with concrete.

Replace unconsolidated concrete.

If you damage existing bar reinforcement during removal, lengthen the removal area to provide the specified splicing length. Below the reinforcement at a partial depth saw cut, leave the face of the concrete pavement inclined no more than 1:12 (horizontal:vertical) into the removal area.

You may make additional saw cuts within the removal area to facilitate concrete removal or to alleviate binding of the saw cut at the removal area's edge.

Prevent base damage and prevent spalling of the concrete remaining in place. Remove and replace base material disturbed during removal. Place a minimum 4-mil thick polyethylene sheet between the base and new continually reinforced concrete pavement. If concrete is used as base, place replacement continually reinforced concrete pavement after the concrete base has gained sufficient strength to prevent displacement.

For transverse joints, connect longitudinal bar reinforcement with lap splices in compliance with Section 52-1.08A, "Lap Splicing Requirements," of the Standard Specifications.

For longitudinal joints, drill and bond tie bars in compliance with Section 40-3.05, "Tie Bar Placement," of the Standard Specifications.

Within 18 hours after inserting tie bars into the chemical adhesive-filled holes, demonstrate the bond strength is 3/4 of the tie bar yield strength when tested under ASTM E 488. If the bond strength does not comply, increase the embedment depth and retest. Do not place replacement continuously reinforced concrete pavement until the bond strength complies with the specifications.

Sawcut and seal expansion joints in the repair area. Use preformed sponge rubber expansion joint filler for expansion joints and longitudinal joints. Preformed sponge rubber expansion joint filler must comply with ASTM D 1752.

MEASUREMENT AND PAYMENT

Continuously reinforced concrete pavement (terminal joint), continuously reinforced concrete pavement (expansion joint), and continuously reinforced concrete pavement (pavement anchorage) of the types designated in the Verified Bid Item List are measured by the linear foot from field measurements.

If the Engineer accepts a test strip and it remains as part of the paving surface, the test strip is measured and paid for as continuously reinforced concrete pavement, seal pavement joint, and seal isolation joint as the case may be.

Full compensation for coring test strips and for back-filling core holes when the test strip remains as part of the continually reinforced concrete pavement is included in the contract price paid per cubic yard for continuously reinforced concrete pavement and no additional compensation will be allowed therefor.

The contract price paid per linear foot for continuously reinforced concrete pavement (terminal joint) of the type designated in the Verified Bid Item List includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the terminal joints including saw cutting, dowel bars, drill and bond dowel bars, support slab, support slab reinforcement, tack coat, and temporary hot mix asphalt, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract price paid per linear foot for continuously reinforced concrete pavement (expansion joint) of the type designated in the Verified Bid Item List includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in continuously reinforced concrete pavement (expansion joint), complete in place, including polystyrene, support slab, support slab reinforcement, dowel bars, drill and bond dowel bars, and bond breaker, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract price paid per linear foot for continuously reinforced concrete pavement (pavement anchorage) includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in continuously reinforced concrete pavement (pavement anchorage), complete in place, including cross drains, anchor reinforcement, filter fabric, and permeable material, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for providing a facility for and attending the prepaving conference is included in the contract price paid per cubic yard for continuously reinforced concrete pavement and no additional compensation will be allowed therefor.

Full compensation for epoxy-coating of steel reinforcement is included in the contract price paid per cubic yard for continuously reinforced concrete pavement and no additional compensation will be allowed therefor.

SECTION 10-2 HIGHWAY PLANTING AND IRRIGATION SYSTEMS

10-2.01 GENERAL

The work performed in connection with highway planting and irrigation systems shall conform to the provisions in Section 20, "Erosion Control and Highway Planting," of the Standard Specifications and these special provisions.

When fluctuations of water pressure and water supply are encountered during normal working hours, plants shall be watered at other times, as often, and in sufficient amounts as conditions may require to keep the soil and plant roots moist during the life of the contract.

Full compensation for watering plants outside normal working hours shall be considered as included in the contract lump sum prices paid for highway planting and plant establishment work and no additional compensation will be allowed therefor.

PROGRESS INSPECTIONS

Progress inspections will be performed by the Engineer for completed highway planting and irrigation system work at designated stages during the life of the contract.

Progress inspections will not relieve the Contractor of responsibility for installation in conformance with the special provisions, plans and Standard Specifications. Work within an area shall not progress beyond each stage until the inspection has been completed, corrective work has been performed, and the work is approved, unless otherwise permitted by the Engineer.

The requirements for progress inspections will not preclude additional inspections of work by the Engineer at other times during the life of the contract.

The Contractor shall notify the Engineer, in writing, at least 4 working days prior to completion of the work for each stage of an area and shall allow a minimum of 3 working days for the inspection.

Progress inspections will be performed at the following stages of work:

A. During pressure testing of the pipelines on the supply side of control valves.
B. During testing of low voltage conductors.
C. Before planting begins and after completion of the work specified for planting in Section 20-4.03, "Preparing Planting Areas," of the Standard Specifications.
D. Before plant establishment work begins and after completion of the work specified for planting in Section 20-4.05, "Planting," of the Standard Specifications.
E. At intervals of one month during the plant establishment period.

COST BREAK-DOWN

The Contractor shall furnish the Engineer a cost break-down for the contract lump sum items of highway planting and irrigation system. Cost break-down tables shall be submitted to the Engineer for approval within 15 working days after the contract has been approved. Cost break-down tables will be approved, in writing, by the Engineer before any partial payment will be made for the applicable items of highway planting and irrigation system involved.

Attention is directed to "Time-Related Overhead" of these special provisions regarding compensation for time-related overhead.

Cost break-downs shall be completed and furnished in the format shown in the samples of the cost break-downs included in this section. Line item descriptions of work shown in the samples are the minimum to be submitted. Additional line item descriptions of work may be designated by the Contractor. If the Contractor elects to designate additional line item descriptions of work, the quantity, value and amount for those line items shall be completed in the same manner as for the unit descriptions shown in the samples. The line items and quantities given in the samples are to show the manner of preparing the cost break-downs to be furnished by the Contractor.

The Contractor shall determine the quantities required to complete the work shown on the plans. The quantities and their values shall be included in the cost break-downs submitted to the Engineer for approval. The Contractor shall be responsible for the accuracy of the quantities and values used in the cost break-downs submitted for approval.

The sum of the amounts for the line items of work listed in each cost break-down table for highway planting and for irrigation system work shall be equal to the contract lump sum price bid for Highway Planting and Irrigation System, respectively. Overhead and profit, except for time-related overhead, shall be included in each individual line item of work listed in a cost break-down table.

No adjustment in compensation will be made in the contract lump sum prices paid for highway planting and irrigation system due to differences between the quantities shown in the cost break-downs furnished by the Contractor and the quantities required to complete the work as shown on the plans and as specified in these special provisions.

Individual line item values in the approved cost break-down tables will be used to determine partial payments during the progress of the work and as the basis for calculating an adjustment in compensation for the contract lump sum items of highway planting and irrigation system due to changes in line items of work ordered by the Engineer. When the total of ordered changes to line items of work increases or decreases the lump sum price bid for either Highway Planting or Irrigation System by more than 25 percent, the adjustment in compensation for the applicable lump sum item will be determined in the same manner specified for increases and decreases in the total pay quantity of an item of work in Section 4-1.03B, "Increased or Decreased Quantities," of the Standard Specifications.

HIGHWAY PLANTING COST BREAK-DOWN

Contract No. 10-415804

UNIT DESCRIPTION	UNIT	APPROXIMATE QUANTITY	VALUE	AMOUNT
ROADSIDE CLEARING	LS	LUMP SUM		
SOIL AMENDMENT	CY	40.5		
MULCH	CY	6,741		
COMMERCIAL FERTILIZER (PACKET)	EA	3,618		
PLANT (GROUP A)	EA	1,350		
PLANT (GROUP B)	EA	756		
HEADER BOARD	LF	971		
CLASS 2 AGGREGATE BASE	CY	101.5		

TOTAL _____

IRRIGATION SYSTEM COST BREAK-DOWN

Contract No. 10-415804

UNIT DESCRIPTION	UNIT	APPROXIMATE QUANTITY	VALUE	AMOUNT
ARMOR-CLAD CONDUCTORS	LS	LUMP SUM		
1" ELECTRIC REMOTE CONTROL VALVE	EA	6		
1-1/2" ELECTRIC REMOTE CONTROL VALVE	EA	28		
2" ELECTRIC REMOTE CONTROL VALVE (MASTER)	EA	1		
FIELD UNIT 'B'	EA	1		
ADDITIONAL AUXILIARY EQUIPMENT	LS	LUMP SUM		
2" FLOW SENSOR	EA	1		
REMOTE IRRIGATION CONTROL SYSTEM TRAINING	LS	LUMP SUM		
3/4" PLASTIC PIPE (PR 200) (SUPPLY LINE)	LF	49,800		
1" PLASTIC PIPE (PR 200) (SUPPLY LINE)	LF	5,900		
1-1/4" PLASTIC PIPE (PR 200) (SUPPLY LINE)	LF	7,100		
1-1/2" PLASTIC PIPE (PR 200) (SUPPLY LINE)	LF	2,300		
2" PLASTIC PIPE (PR 200) (SUPPLY LINE)	LF	8,500		
2-1/2" PLASTIC PIPE (PR 200) (SUPPLY LINE)	LF	3,100		
3" PLASTIC PIPE (PR 200) (SUPPLY LINE)	LF	3,300		
SPRINKLER (TYPE C-2 MOD-10)	EA	2,676		
SPRINKLER (TYPE C-2 MOD-18)	EA	832		
SPRINKLER (TYPE C-2 MOD-36)	EA	692		
2-1/2" GATE VALVE	EA	3		
3" GATE VALVE	EA	6		
1-1/2" WYE STRAINER	EA	8		
2" WYE STRAINER	EA	1		

TOTAL _____

CONTRACT NO. 10-415804
ADDED PER ADDENDUM NO.2 DATED MAY 9, 2012

10-2.02 (BLANK)

10-2.03 (BLANK)

10-2.04 HIGHWAY PLANTING

The work performed in connection with highway planting shall conform to the provisions in Section 20-4, "Highway Planting," of the Standard Specifications and these special provisions.

HIGHWAY PLANTING MATERIALS

Mulch

Mulch must be shredded bark.

Commercial Fertilizer (Slow Release)

Commercial fertilizer (slow release) shall be a pelleted or granular form, shall be slow or controlled release with a nutrient release over an 8-month to 12-month period, and shall fall within the following guaranteed chemical analysis range:

Ingredient	Percentage
Nitrogen	16-21
Phosphoric Acid	6-8
Water Soluble Potash	4-10

Commercial Fertilizer (Packets)

Commercial fertilizer (packet) shall be slow or controlled release and shall be in a biodegradable packet form. The packet shall gradually release nutrients over a 12-month period. Each packet shall have a weight of 10 g ± 1 g and shall have the following guaranteed chemical analysis:

Ingredient	Percentage
Nitrogen	20
Phosphoric Acid	10
Water Soluble Potash	5

ROADSIDE CLEARING

Before preparing planting areas or commencing irrigation trenching operations for planting areas, trash and debris shall be removed from these areas as required under Construction Site Management of these special provisions.

The project area shall be cleared as specified herein:

A. Weeds shall be killed and removed within proposed mulch areas and within the area extending beyond the outer limits of the proposed mulch areas to the adjacent edges of shoulders, dikes, curbs, sidewalks, walls, existing planting and fences. At those locations where proposed mulch areas are 12 feet or more from the adjacent edges of shoulders, dikes, curbs, sidewalks, walls, and fences, the clearing limit shall be 6 feet beyond the outer limits of the proposed mulch areas.
B. Weeds shall be killed and removed from within areas where class 2 aggregate base maintenance access is to be placed.
C. Weeds outside of mulched areas, plant basins, maintenance access areas, and ground cover shall be controlled by mowing. Limits of mowing shall extend from the weeds to be killed areas out to the edges of pavement, dikes, curbs, sidewalks, and fences.

After the initial roadside clearing is complete, additional roadside clearing work shall be performed as necessary to maintain the areas, as specified above, in a neat appearance until the start of the plant establishment period. This work shall include the following:

A. Trash and debris shall be removed.
B. Rodents shall be controlled.
C. Weed growth shall be killed before the weeds reach the seed stage of growth or exceed 6 inches in length, whichever occurs first.
D. Weeds in plant basins, including basin walls, shall be removed by hand pulling, after the plants have been planted.
E. Areas outside the areas specified to be cleared of weeds shall be mowed.

Weed Control

Weed control shall also conform to the following:

A. Stolon type weeds shall be killed with glyphosate.
B. Mowed material, removed weeds, and ground cover shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.
C. Areas to be mowed shall be mowed when weed height exceeds 12 inches. Weeds shall be mowed to a height of 2 inches to 6 inches. After drainage basins and other areas received erosion control materials, those areas shall be mowed in conformance with "Plant Establishment Work," of these special provisions.

Roadside clearing work shall not include work required to be performed as clearing and grubbing as specified in Section 16, "Clearing and Grubbing," of the Standard Specifications.

PESTICIDES

Pesticides used to control weeds shall conform to the provisions in Section 20-4.026, "Pesticides," of the Standard Specifications. Except as otherwise provided in these special provisions, pesticide use shall be limited to the following materials:

Aminopyralid
Diquat
Dithiopyr
Clopyralid MEA
Fluazifop-P-Butyl
Flumioxazin
Glyphosate
Imazapyr
Isoxaben (Preemergent)
Oryzalin (Preemergent)
Oxyfluorfen (Non-odor type)
Pendimethalin (Preemergent)
Prodiamine (Preemergent)
Sethoxydim

A granular preemergent may be used when applied to areas that will be covered with mulch, excluding plant basins. Granular preemergent shall be limited to the following material:

Oxadiazon

Granular preemergent shall be applied prior to the application of mulch. Mulch applications shall be completed in these areas on the same working day.

Glyphosate shall be used to kill stolon type weeds.

A minimum of 100 days shall elapse between applications of preemergents.

Preemergents shall not be applied within 18 inches of plants.

Growth regulators shall not be applied within 6 feet of trees, shrubs or vines.

If the Contractor elects to request the use of other pesticides on this project, the request shall be submitted, in writing, to the Engineer not less than 15 days prior to the intended use of the other pesticides. Except for the pesticides listed in these special provisions, no pesticides shall be used or applied without prior written approval of the Engineer.

Pesticides shall not be applied within the limits of the plant basins. Pesticides shall not be applied in a manner that allows the pesticides to come in contact with the foliage and woody parts of the plants.

PREPARING PLANTING AREAS

Plants adjacent to drainage ditches shall be located so that after construction of the basins, no portion of the basin walls shall be less than the minimum distance shown on the plans for each plant involved.

PLANTING

Backfill material for plant holes must be a mixture of soil and soil amendment. The quantity of soil amendment shall be as shown on the Plant List. Thoroughly mix backfill material and uniformly distribute throughout the entire depth of the plant hole without clods and lumps.

Apply or place commercial fertilizer (slow release) at the time of planting and at the rates shown on the Plant List.

Place commercial fertilizer packets in the backfill of each plant at the time of planting and at the rate shown on the Plant List to within 6 inches to 8 inches of the soil surface and approximately one inch from the roots. When more than one fertilizer packet is required per plant, the packets must be distributed evenly around the root ball.

A granular preemergent must be applied to areas to be covered with mulch outside of plant basins.

Mulch placed in areas outside of plant basins shall be spread to a uniform depth.

Do not place mulch within 4 feet of the centerline of earthen drainage ditches, within 4 feet of the edge of paved ditches, and within 4 feet of the centerline of drainage flow lines.

Attention is directed to "Irrigation Systems Functional Test" of these special provisions regarding functional tests of the irrigation systems. Do not perform planting in an area until the functional test has been completed for the irrigation system serving that area.

PLANT ESTABLISHMENT WORK

The plant establishment period shall be Type 2 and shall not be less than 250 working days.

Attention is directed to "Relief From Maintenance and Responsibility" in these special provisions regarding relief from maintenance and protection.

Commercial fertilizer (slow release) shall be applied to trees, shrubs, vines and ground cover during the first week of April and October of each year. Commercial fertilizer shall be applied at the rates shown on the plans and shall be spread with a mechanical spreader wherever possible.

During the plant establishment period, the plants shall be watered utilizing the Remote Irrigation Control System (RICS) software program. A watering schedule shall be submitted to the Engineer for use during the plant establishment period.

Weeds within plant basins, including basin walls , shall be controlled by hand pulling.

Weeds within mulched areas and outside of plant basins, and weeds within maintenance access areas shall be controlled by killing.

Weeds outside of mulched areas, plant basins, maintenance access areas, the median, and paved areas shall be controlled by mowing. Drainage basins and other areas with erosion control materials shall be mowed after seeds have set and the height exceeds 18 inches, and those areas shall be mowed to a height of 6 inches.

Weeds within areas of minor concrete (textured paving) shall be controlled by killing.

Except as specified in these special provisions, disposal of mowed material will not be required unless ordered by the Engineer. Disposal of mowed material, as directed by the Engineer, will be paid for as extra work as provided in Section 4-1.03D,"Extra Work," of the Standard Specifications.

At the option of the Contractor, plants of a larger container size than those originally specified may be used for replacement plants during the first 125 working days of the plant establishment period.

After 125 working days of the plant establishment period have been completed, replacement of plants, except for ground cover plants, shall be one-gallon size for seedlings, pot and liner size plants; 5-gallon size for one-gallon size plants; 15-gallon size for 5-gallon size plants; and other plant replacement plants shall be the same size as originally specified.

When ordered by the Engineer, one application of a preemergent pesticide conforming to the provisions in "Pesticides" of these special provisions, shall be applied between 40 working days and 50 working days prior to completion of the plant establishment period. This work will be paid for as extra work as provided in Section 4-1.03D,"Extra Work," of the Standard Specifications.

Wye strainers shall be cleaned at least 15 days prior to the completion of the plant establishment period.

The final inspection shall be performed in conformance with the provisions in Section 5-1.13, "Final Inspection," of the Standard Specifications and shall be completed a minimum of 20 working days before the estimated completion of the contract.

10-2.05 IRRIGATION SYSTEMS

Irrigation systems shall be furnished and installed in conformance with the provisions in Section 20-5, "Irrigation Systems," of the Standard Specifications, except materials containing asbestos fibers shall not be used.

Method A pressure testing shall conform to the provisions in Section 20-5.03H(1), "Method A", of the Standard Specifications, except leaks that develop in the tested portion of the system shall be located and repaired after each test period when a drop of more than 5 pounds per square inch is indicated by the pressure gage. After the leaks have been repaired, the one hour pressure test shall be repeated and additional repairs made until the drop in pressure is 5 pounds per square inch or less.

VALVE BOXES

Valve boxes shall conform to the provisions in Section 20-2.24, "Valve Boxes," of the Standard Specifications, except as otherwise provided herein.

Valve boxes shall be precast portland cement concrete.

Covers for concrete valve boxes shall be concrete, cast iron or steel. Cast iron and steel covers shall be hinged with brass hinge pins for valve boxes containing valves smaller than 2 inches.

Valve boxes shall be identified on the top surface of the covers by labels containing the appropriate abbreviation for the irrigation facility contained in the valve box as shown on the plans. Valve boxes that contain remote control valves shall be identified by the appropriate letters and numbers (controller and station numbers). Labels for valve boxes shall conform to the provisions in Section 20-5.03F, "Valves and Valve Boxes," of the Standard Specifications.

Label material shall be plate plastic.

GATE VALVES

Gate valves shall be as shown on the plans and in conformance with the provisions in Section 20-2.28, "Gate Valves," of the Standard Specifications and these special provisions.

Gate valves, smaller than 3 inches in size, shall be furnished with a cross-handle.

Gate valves, 3 inches and larger in size, shall be furnished with a square nut and 3 long shank keys that will operate the valve.

Gate valves shall have a solid bronze or brass wedge.

ELECTRIC AUTOMATIC IRRIGATION COMPONENTS

Attention is directed to the provisions in "Electric Service (Irrigation)" of these special provisions regarding electrical power for irrigation controllers and irrigation controller enclosure cabinets.

Electric Remote Control Valves

Electric remote control valves shall conform to the provisions in Section 20-2.23, "Control Valves," of the Standard Specifications and the following:

A. Valves shall be brass construction.
B. Valves shall be angle pattern (bottom inlet) or straight pattern (side inlet) as shown on the plans.

Pull Boxes

Pull box installations shall conform to the provisions in Section 20-5.027I, "Conductors, Electrical Conduits and Pull Boxes," of the Standard Specifications.

Conductors

Low voltage, as used in this section "Conductors," shall mean 36 V or less.

Low voltage control and neutral conductors in pull boxes and valve boxes, at irrigation controller terminals, and at splices shall be marked as follows:

A. Conductor terminations and splices shall be marked with adhesive backed paper markers or adhesive cloth wrap-around markers, with clear, heat-shrinkable sleeves sealed over the markers.
B. Non-spliced conductors in pull boxes and valve boxes shall be marked with clip-on, "C" shaped, white extruded polyvinyl chloride sleeves. Marker sleeves shall have black, indented legends of uniform depth with transparent overlays over the legends and "chevron" cuts for alignment of 2 or more sleeves.

Markers for the control conductors shall be identified with the appropriate number or letter designations of irrigation controllers and station numbers. Markers for neutral conductors shall be identified with the appropriate number or letter designations of the irrigation controllers.

The color of low voltage neutral and control conductor insulation, except for the striped portions, shall be homogeneous throughout the entire thickness of the insulation.

Insulation for conductors may be UL listed polyethylene conforming to UL44 test standards with a minimum insulation thickness of 41 mils for wire sizes 10AWG and smaller.

REMOTE IRRIGATION CONTROL SYSTEM

The Remote Irrigation Control System (RICS) shall consist of an existing base station, new field units, new flow sensor, new auxiliary equipment, and personnel training.

Arrangements have been made to insure that any successful bidder can obtain the specified equipment listed below from Ewing Irrigation, 7530 N. Ingram Avenue, Fresno, California 93711. Telephone (559) 438-9530.

Prices quoted are guaranteed until 12/31/2012.

Quoted prices do not include sales tax.

Quoted prices include delivery.

BASE STATION

The existing base station is installed at the Department of Transportation's District 10 Maintenance Station at 1801 Motel Drive, Merced, California 95340, telephone (209) 726-5492.

Communication Equipment

The communication equipment at the existing base station is standard telephone line.

Set Up

The Contractor will use the existing irrigation software program to determine actual flows (gallons per minute) for each new remote control valve. The Contractor will enter the flow data into the irrigation software program. The Contractor will provide a print out of the valves and related flows to the Engineer.

FIELD UNITS

Field units shall be manufactured by CALSENSE. Field units shall consist of ET2000e controllers and auxiliary equipment when combined is known as ET2000e-40-R-RRe-SSE-R as shown in the table below.

The quoted prices and equipment are as follows:

FIELD UNIT 'B'				
EQUIPMENT DESCRIPTION	MODEL NUMBER	QUANTITY (EACH)	QUOTED PRICE (EACH)	EXTENDED PRICE
CALSENSE 40 STATION ET CONTROLLER	ET-2000e	1	$3,515.00	$3,515.00
INTERNAL PHONE MODEM	-R	1	$610.00	$610.00
ENHANCED RADIO REMOTE RECEIVER BOARD	-RRe	1	$198.00	$198.00
HEAVY DUTY-STAINLESS STEEL ENCLOSURE WITH TP-1/ DOME	-SSE-R	1	$2,360.00	$2,360.00

*Prices for all items listed above include grounding grid packages, surge suppression and terminal strips.

Communication Equipment

The communication equipment for the field units shall have a 2-way data communication link with the base station by standard telephone line. .

The Contractor shall make application and arrangements for telephone service and assign the services to the State upon the date of acceptance of the contract. Fees for the applications, licenses and leases will be reimbursed by the State.

Inputs and outputs of the communication system shall be lightning, transient and surge protected, including power, antenna and control connections.

ADDITIONAL AUXILIARY EQUIPMENT

Additional auxiliary items for Field Unit 'B' shall consist of the following:

ADDITIONAL AUXILIARY EQUIPMENT				
EQUIPMENT DESCRIPTION	MODEL NUMBER	QUANTITY (EACH)	QUOTED PRICE (EACH)	EXTENDED PRICE
ENHANCED RADIO REMOTE TRANSMITTER	RRe-TRAN	1	$880.00	$880.00

FLOW SENSORS

Flow sensors shall be manufactured by CALSENSE. The quoted prices and equipment are as follows:

ITEM	MODEL NUMBER	QUANTITY (EACH)	QUOTED PRICE (EACH)	EXTENDED PRICE
CALSENSE 2" BRASS FLOW METER	FM-2B	1	$795.00	$795.00

TRAINING

Personnel training will be the responsibility of the Contractor and shall consist of a minimum 8 hours of classroom and field training for 4 personnel on the use and adjustment of the existing base station equipment (including software) and field units. The training shall be conducted over 1 working day, unless otherwise permitted by the Engineer. One complete set of training documentation and training aids shall be provided to each trainee and 2 sets to the Engineer (if videos are included in the training sessions, only one video tape copy will be required) and the training material shall become the property of the State.

The State will provide space for the training, including chairs and tables. Other required training aids will be the responsibility of the Contractor. At the option of the Contractor, the training facility may be provided at a facility of the Contractor's choice, that is, within 30 miles of the project location or of the Office of the District Director of the District in which the project is located.

ARMOR-CLAD CONDUCTORS

Armor-clad conductors shall be used in direct burial applications from pull boxes adjacent to irrigation controller to remote control valves and other irrigation facilities in conformance with the details shown on the plans and these special provisions.

Armor-clad conductors shall conform to the following:

A. Conductors shall be the proper size for the application, and shall be solid, uncoated copper with a conductor size not less than 90 percent of the AWG diameter required.
B. At the Contractor's option, conductor insulation coverings shall be either of the following:

    1. Polyvinyl chloride (PVC) conforming to UL style, Type UF 60°C, 600 V. Average thickness of insulation shall be not less than 60 mils, with a minimum thickness of 54 mils, or
    2. UL listed polyethylene conforming to UL44 test standards with a minimum insulation thickness of 41 mils for wire sizes 10AWG and smaller.

C. Armor shall be a minimum 0.005-inch thick by 0.50-inch wide Type 304 stainless steel tape that is helically wrapped over each conductor with a 33 percent minimum overlap.
D. Outer jacket for conductors shall be sunlight resistant PVC and shall conform to the Insulated Power Cable Engineer's Association (ICEA) S-61-402, NEMA Standard WC5, and UL Listing 1263. Nominal thickness of the outer jacket shall be 30 mils with a minimum thickness of 24 mils.

IRRIGATION CONTROLLER ENCLOSURE CABINET

Irrigation controller enclosure cabinets shall be as specified in "Remote Irrigation Control System" of these special provisions. Equipment required to be installed in the cabinets, constructing foundations and pads, and conduits to pull box adjacent to cabinets, shall be installed in conformance with the details shown on the plans, the provisions of Section 86-3.04A, "Cabinet Construction," of the Standard Specifications, and these special provisions.

Electric service shall be installed in accordance with "Electric Service (Irrigation)" of these special provisions.

Irrigation controller enclosure cabinet doors shall not be furnished with integral door locks. Irrigation controller enclosure cabinet shall have provisions for padlocking. Padlocks for irrigation controller enclosure cabinet will be furnished by the Engineer.

Equipment, except for field wiring, shall be installed in the cabinet in a shop by the equipment manufacturer's representative or distributor prior to field installation.

IRRIGATION SYSTEMS FUNCTIONAL TEST

Functional tests for the remote irrigation controller system (RICS) and associated automatic irrigation systems shall conform to the provisions in Section 20-5.027J, "Testing," of the Standard Specifications and these special provisions.

Two functional tests shall be performed, one without and one with connection to the remote irrigation controller system base station. Both tests shall consist of demonstrating to the Engineer, through one complete cycle of the irrigation controllers in the automatic mode, that the associated automatic components of the irrigation systems operate properly.

The Contractor shall notify the Engineer not less than 2 weeks prior to starting the functional tests for the remote irrigation control system.

The existing remote irrigation controller system base station is located at the Department of Transportation District Maintenance Station, 1801 Motel Drive, Merced, CA 95340.

Associated automatic components for both tests shall include, but not limited to, new remote control valve actuator systems, well systems, irrigation controllers, remote control valves, conductors, and flow sensors. Associated automatic components for the second test shall include, but not be limited to, existing irrigation software programs, new and existing phone, and flow alarms for high, low, zero, and maximum mainline flows.

The first test shall be performed prior to planting the plants and shall consist of testing the irrigation controllers and associated automatic irrigation systems without connection to the remote irrigation controller system base station. Upon completion of a satisfactory functional test, and correction of the deficiencies, the plants to be planted in the areas watered by the irrigation system may be planted, provided the planting areas have been prepared as specified in these special provisions.

The second test shall be performed prior to the start of plant establishment and shall consist of testing the irrigation controllers (field units) and associated automatic irrigation systems with connection to the remote irrigation controller system base station. As part of the second test, a remote irrigation controller system watering schedule shall be submitted for each irrigation controller (field unit) to the Engineer. The Engineer will enter the watering schedule into the irrigation software program, and a computer printout will be made available to the Contractor for verification. If the Engineer determines the submitted watering schedule is unacceptable, a revised watering schedule shall be submitted to the Engineer for approval within 5 working days. Also as part of the second test, the Contractor shall demonstrate to the Engineer that the remote irrigation controller system base station detects and reports the high, low, zero, and maximum mainline flow alarms. Upon completion of a satisfactory test, including correction of deficiencies, the plant establishment period may begin, provided planting work as specified in these special provisions has been completed except for plant establishment work.

If existing and new automatic components of the irrigation systems, including remote irrigation controller system base station components, fail a functional test, the components shall be repaired. Repairs shall be at the Contractor's expense, except for repairs to an existing base station components which will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications. Testing shall be repeated until satisfactory operation is obtained.

Repair or replacement of existing irrigation facilities due to unsatisfactory performance shall conform to the provisions in Section 20-5.025, "Maintain Existing Water Supply," of the Standard Specifications and "Existing Highway Irrigation Facilities" of these special provisions.

PIPE

Plastic Pipe

Plastic pipe supply lines must be polyvinyl chloride (PVC) 1120 or 1220 pressure rated pipe with the minimum pressure rating (PR) shown on the plans.

Plastic pipe supply lines must have solvent cemented type joints. Primers must be used on the solvent cemented type joints.

Plastic pipe supply lines (main) must have a minimum cover of 1.5 feet in basin areas.

Fittings for plastic pipe supply lines with a pressure rating (PR) of 315 must be Schedule 80.

THRUST BLOCK

Thrust blocks shall be installed in accordance with the plans and these special provisions. Thrust blocks shall be installed on the main supply line at all changes in direction and terminus run.

SPRINKLERS

Sprinklers shall conform to the type, pattern, material, and operating characteristics listed in the "Sprinkler Schedule" shown on the plans.

SPRINKLER (TYPE C-2 MOD-10)(TYPE C-2 MOD-18) (TYPE C-2 MOD-36)

Sprinkler (Type C-2 MOD-10)(Type C-2 MOD-18)(Type C-2 MOD-36), shall be furnished and installed as shown on the plans, in conformance with these special provisions and as directed by the Engineer.

Multi-hole perforated plastic pipe shall be commercially available, rigid, polyvinyl chloride (PVC) pipe with small round holes arranged in columns spaced evenly around the sides of the pipe.

Drain grate shall be a commercially available, one-piece, injection molded drain grate manufactured from structural foam polyolefins, with ultraviolet light inhibitors. Color of drain grate shall be black.

Sand filter sock shall be a commercially available, one-piece sand filter sock manufactured and sized to fit snug over the multi-holed perforated plastic pipe. Sand filter sock shall be cut to length and not tear or unravel.

Check valve shall be commercially available and adjustable to hold back water from 5 to 32 feet of elevation change. Teflon paste or tape all threaded connections. Do not use pipe dope or solvent cements.

Pea gravel for filling the drainpipe shall have a maximum diameter of 1/2 inch. Pea gravel shall be naturally rounded aggregate, clean, washed, dry and free from clay or organic material.

WYE STRAINERS

Wye strainers shall be installed on the upstream side of the electric remote control valves as shown on the plans.

Ball valves shall have a two-piece brass or bronze body, full port opening, and shall conform to the following:

Specification	Minimum Requirement
Non-shock cold water working pressure	400 psi
Seats	TFE (Teflon)
O-Ring Seals	TFE (Teflon)

When garden valves are opened, discharge shall be up and out of the valve box.

FINAL IRRIGATION SYSTEM CHECK

A final check of new irrigation facilities shall be performed not more than 40 working days and not less than 30 working days prior to acceptance of the contract.

The length of watering cycles using potable water measured by water well for the final check of irrigation facilities will be determined by the Engineer.

Remote control valves connected to new irrigation controllers shall be checked for automatic performance when the controllers are in automatic mode.

Unsatisfactory performance of irrigation facilities installed or modified by the Contractor shall be repaired and rechecked at the Contractor's expense until satisfactory performance is obtained, as determined by the Engineer.

Nothing in this section "Final Irrigation System Check" shall relieve the Contractor of full responsibility for making good or repairing defective work or materials found before the formal written acceptance of the entire contract by the Director.

Full compensation for checking the irrigation systems prior to the acceptance of the contract shall be considered as included in the contract lump sum price paid for plant establishment work and no additional compensation will be allowed therefor.

10-3.185 WELL PUMP ELECTRICAL SYSTEM

Well pump electrical system includes pump control equipment as shown on the plans and as specified in these special provisions. The Contractor's attention is directed to "Water Well Equipment" of these special provisions, regarding the equipment to be operated and serviced by the well pump electrical systems.

MATERIALS LIST AND DRAWINGS

A list of materials which the Contractor proposes to install for the well pump electrical systems together with the drawings and other data shall be submitted to the Engineer in conformance with the provisions in Section 86-1.04, "Equipment List and Drawings," of the Standard Specifications.

The working drawings shall include a wiring diagram for the well pump systems showing pump control details.

Before the completion of the contract, one set of the approved wiring diagrams for each well pump system shall be covered separately on each side with clear, self-adhesive plastic and placed in a heavy-duty plastic envelope. The envelope shall be attached securely to the inside of the irrigation well pump control enclosure exterior door or at a convenient location designated by the Engineer.

The Contractor shall be responsible for the compatibility and adjustment of components as necessary for the successful operation of the completed installation.

MATERIALS

Conduit

Type 3 conduit shall not be used.

After conductors have been installed, the ends of conduits terminating in pull boxes and irrigation well pump control enclosures shall be sealed with a sealing compound.

Pull Boxes

Covers of pull boxes installed between the service equipment enclosure and the irrigation well pump control enclosure for conduit runs used exclusively for well pump circuits shall be inscribed "ELECTRICAL WELL PUMP."

Conductors And Wiring

Control wiring in the irrigation well pump control enclosure shall be 7-strand No. 14 with Type TW insulation, except for hinge wiring which shall be 19-strand No. 14 with THHN insulation.

Splices shall be avoided wherever possible and splices required shall occur only in fixtures, junction boxes, or pull boxes. Splices shall operate satisfactorily when continuously submersed under 2 feet of water.

Conductor terminations and splices shall be marked with adhesive backed paper markers or cloth wrap-around markers. Clear heat-shrinkable sleeves shall be applied over the markers.

Non-spliced conductors in junction and pull boxes shall be marked with clip-on, "C" shaped, white extruded polyvinyl chloride sleeves. Marker sleeves shall have a black indented legend of uniform depth with a transparent overlay over the legend and a "chevron" cut for alignment of 2 or more sleeves.

Each conductor shall be marked with the same identification number at each termination, each junction box, and each pull box.

Irrigation Well Pump Control Enclosures

Irrigation well pump control enclosures shall be of welded construction and shall be fabricated from 12-gage (0.105-inch) cold rolled sheet steel. The enclosures conform to the details shown on the plans for Type III-A service equipment enclosure except that the metering section and the associated metering equipment shall not be furnished.

Circuit breakers, overload reset button and switches shall be externally operable after the exterior door is opened. The hinged interior door shall have a sign indicating that the interior door is not to be opened unless the main breaker is in the "off" position.

The enclosure shall be factory pre-wired in conformance with NEMA Class IIC wiring. Wires entering or leaving the enclosure shall terminate on terminal blocks. Natural gray or dark gray colored wiring shall not be used in the irrigation well pump control enclosure.

The wiring shall be arranged so that any piece of equipment may be removed without disconnecting any wiring except the leads to that piece of equipment.

The irrigation well pump control enclosure shall be finished in conformance with the provisions for painting Type III steel service equipment enclosures in Section 86-2.16, "Painting," of the Standard Specifications, except the finish color shall be a light brown color closely matching Federal Standard No. 595B, Color No. 20450.

The following equipment shall be furnished and installed in the irrigation well pump control enclosure:

A. Main Disconnect
B. Fuses
C. Transformer
D. Push Button Switch
E. Irrigation Controller Disconnect
F. Induction Relay
G. Variable Frequency Drive with Input Reactor
H. Time Meter
I. Selector Switch
J. Control Relays
K. Neutral Bar
L. Ground bar
M. Terminal blocks
N. Electrodes

Main Disconnect

Well pump main disconnect shall be a 3-pole, 480-V (ac), 30-A, molded case circuit breaker with adjustable magnetic trip. The interrupting capacity of the main disconnect shall be not less than 18,000 A (symmetrical) at 480 V (ac).

Fuses

Fuses shall be 4 ampere, 480-volt, dual element ceramic tube fuse and 2-pole barrier type fuse base.

Variable Frequency Drive (VFD)

The VFD must keep the well pump running when the flow of water fluctuates between the changing of the irrigation controller stations. Based on the analog input signal from the pressure transducer, the VFD must maintain a constant pressure in the delivery line at variable flow rates.

The VFD must have a potentiometer or keypad for adjusting motor speed for manual mode.

The VFD must have 5 percent input reactance at rated motor horsepower, be mounted in the enclosure, and be Listed and labeled by a NRTL. The VFD must process the analog input signal from the pressure transducer to determine water pressure and set the well pump motor speed.

The VFD shall be rated for 7.5 Horsepower, 480 V three-phase input/output.

The VFD and the Selector Switch must operate the well pump as follows:

1. Automatic mode must start and stop the pump based on digital input signals from one or more irrigation controller(s) and control the speed of the pump based on the analog input signal from the pressure transducer.
2. Manual mode must start the pump regardless of input signal

The VFD must have a LCD screen with operator interface.

Selector Switch

Selector switches shall be rotary action, single pole, 3-position, 10 A, 120-V (ac) switches. Switch contacts shall have an inductive pilot duty rating of 60 A (make), 6 A (break), and 10 A (continuous) at 120 V (ac) and 35 percent power factor.

Push Button Switch

Push button switches shall be 10 A, 120-V (ac) switches. Switch contacts shall have an inductive pilot duty rating of 60 A (make), 6 A (break), and 10 A (continuous) at 120 V (ac) and 35 percent power factor.

Irrigation Controller Disconnect

Irrigation controller disconnect shall be single pole, 120-V (ac), 15-A trip, molded case circuit breaker. Irrigation controller disconnect shall have an interrupting capacity of 10,000 A (symmetrical) at 120 V (ac).

Neutral Bar

Neutral bars shall be 100-A copper neutral bars with circuit taps.

Ground Bar

Ground bars shall be 100-A copper ground bars with circuit taps.

Transformer

Transformer shall be double-wound, 1.5-kVA, 60 Hertz (Hz), dry type transformers with a 480-V (ac) primary and 120-V (ac) secondary.

Control Relays

Control relays shall be 24-V (dc), 10-A, 2-pole, double-throw, 24-V (ac) coil, general purpose type with an enclosed clear plastic cover and 8-pin plug base. Sockets for relays shall be the barrier type, 8-contact relay sockets with 10-A contacts and screw terminals.

Induction Relays

Induction relays shall be 120-V (ac), 10-A, open, electromechanical type, continuous duty rated, and transformer type Transformers secondary voltage shall be rated at 300-V (ac) and the relays shall have one normally open and one normally closed contact rated at 120-V (ac), 10-A.

Terminal Blocks

Terminal blocks shall be rated 600 V, 30-A and shall be molded plastic with 2 or more mounting holes and 2 or more terminals in each cast block. The molded plastic shall have high resistance to heat, electrical potential, moisture, and mechanical shock and shall have a smooth even finish. Each block shall have a molded marking strip attached with screws. The identifying numbers of the terminating wires as shown on the Contractor's working drawings shall be engraved in the marking strip. Terminal blocks shall have tubular, high pressure clamp connectors.

Time Meter

Time meters shall be 120-V (ac), 60 Hz, 2.6 inches, panel mounted, elapsed-time meters with a range of 0 to 99,999.9 hours. Time meters shall be completely enclosed for dust protection and shall have the terminals on the back of the enclosure.

Electrodes

The well pump electrical system shall be provided with three electrodes; higher, lower, and reference electrodes. Each electrode shall consist of a metallic bar enclosed in a plastic housing. Electrodes shall be suspended with PVC insulated wires.

Pressure Transmitter

Pressure transmitter shall be stainless steel body, solid state strain gauge type pressure transmitter enclosed inside a NEMA-4X enclosure to provide noise free, linear output that is proportional to the discharge pressure of the well pump as specified elsewhere in these special provisions. Pressure transmitter shall be rated for the system pressure as specified elsewhere in these special provisions.

Identification Of Units

Units shall be identified in conformance with the provisions in Section 74-3.09, "Identification of Units and Conductors," of the Standard Specifications and these special provisions. Inscriptions on nameplates for devices and switches shall be as shown on the plans.

PAYMENT

The contract lump sum price paid for well pump electrical system shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing a well pump electrical system, complete in place, including foundation, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

SECTION 10-4 IRRIGATION WELL

10-4.01 WATER WELLS

PART 1 - GENERAL

SUMMARY

Scope: This work consists of constructing water well.

Water well work must conform to the current AWWA Standards A100 and Appendices and these special provisions. Do not use cable tool drilling method.

AWWA Standards A100 is herein after known as AWWA.

Related Work:

Earthwork, including excavation and backfill must conform to the provisions in Section 19, "Earthwork," of the Standard Specifications and the special provisions.

Water well equipment, must conform to the requirements in "Water Well Equipment" Section 10-4.02 of these special provisions.

Concrete work must conform to the requirements in Section 90-10 of the standard specifications for "minor concrete".

Chain link fence and gates shall conform to the provisions in Section 80, "Fences," of the Standard Specifications.

Electrical work must conform to the requirements in "Electrical" Section 10-3, of these special provisions.

SUBMITTALS

Action Submittals

Product Data: Submit product data. Product data includes catalog cuts, performance data, installation instructions, and additional documentation. Include an index of all products. Index must include equipment names, manufacturers, and model numbers. Catalog cuts include the following:

1. Manufacturer's name
2. Catalog or part number
3. Size
4. Chemical composition
5. MSDS information
6. Installation instructions

Calculations: Submit calculations recommending gravel pack, well screen length and screen-aperture size. Geologic, screen face and gravel filter must be considered in calculations.

Informational Submittals

Permits: Submit water well drilling permits before starting work.

Standards: Submit the current version of the ANSI/AWWA Standard A100 "Water Wells," before starting work. The AWWA website is http://www.awwa.org/.

Closeout Submittals

Water Quality Analysis: Submit results of water quality analysis.

Submit the completed well drillers log after completion of work and before acceptance of Contract to the Engineer and the County of Merced.

Submit performance testing records and reports.

QUALITY CONTROL AND ASSURANCES

Regulatory Requirements

Work must comply with:

1. Water Well Standards, Bulletin 74-81
2. Water Well Standards, Bulletin 74-90
3. Regulations of Merced County
4. The Water Code, §§ 13260 and 13750.5–13753
5. RWQCB, Central Coast Region waste discharge requirements.

Permits and Reports

Make all arrangement and obtain water well drilling permit from Merced County. Prepare and file a Report of Waste Discharge with the RWQCB Central Coast Region, for discharge of pump testing water.

Water Quality Analysis

Water samples must be submitted for analysis to a CDPH certified laboratory.

Analysis must include the constituents listed in Domestic Water Quality and Monitoring Regulations, 22 CA Codes of Regs, Div 4, Ch 15, for (1) Primary Standards (Inorganic Chemicals), (2) Secondary Drinking Water Standards, and (3) the following:

1. Bicarbonate
2. Carbonate
3. Hydroxide alkalinity
4. Calcium
5. Magnesium
6. Sodium
7. Total hardness
8. pH
9. Temperature
10. Turbidity

Performance Testing

Perform constant rate tests at design or rated capacity of well.
Minimum pumping test time is 24 hours.

PART 2 - MATERIALS

Well Screens

Use only stainless steel type 304 wire-wound continuous-slot screen.

Centralizer

Centralizer must be non-welded bow spring and inert.

Pitless Unit

Pitless unit must be water tight manufactured unit that consists of the following:

1. Pitless case
2. Discharge body
3. Spool
4. Discharge outlet
5. O-Ring seals
6. O-Ring seal protector
7. Hold-down pipe
8. Hold-down hook
9. Lift-out
10. Watertight well cap
11. Screened well vent
12. Conduit tap
13. Conduit seal

PART 3 - CONSTRUCTION

Investigate well site conditions at the approved well location for geologic and hydrologic conditions and groundwater quality. Collect formation samples and geophysical logs. Collect geophysical log types listed in AWWA Appendix I.

Construct well at location approved by the Engineer.

Centralizers must be placed 5 feet above and 5 feet below any section of well screen to assure plumbness and alignment of the blank casing and well screen. Wherever possible, centralizers shall be placed in clay formation.

Develop well with flow rate of 50 GPM. Well development must conform with AWWA Appendix E

Install gravel pack in conformance with AWWA Appendix B

Place grout and seal in conformance with AWWA Appendix C

Plumbness and alignment must conform to sections 4.7.9.2 and 4.7.9.3 of the AWWA. Test plumbness and alignment in conformance with AWWA Appendix D. Alternative testing procedures may be submitted for consideration and if acceptable may be approved.

Pitless unit must be factory-manufactured and sized as shown on the plans.

Measure water level with transducer.

Video survey the inside of the well from the ground surface to the bottom of the well and from the bottom of the well to the ground surface. The video survey must clearly show the interior of the pitless unit, blank well casing, well screen, and well bottom. The video camera must have adequate illumination; record depth in feet and be adjustable to record downward and horizontal views. The survey must be recorded on a standard DVD, and be delivered to the Engineer on completion of the survey.

A 14 inch x 10 inch x 1/16 inch aluminum non-potable water warning sign shall be permanently affixed to the well enclosure gate 5 feet above finished grade. The sign shall be attached with "S" hooks and "C" clips. The sign shall be commercially available, and shall include the text "Non-Potable Water, Do Not Drink" and the do not drink graphic symbol. The sign shall be UV stable and enamel coated.

MEASUREMENT AND PAYMENT

Well Investigation

Well investigation of well site conditions is measured and paid per linear foot.

The contract price per linear foot for well investigation of site conditions includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in investigation of well site.

Water Well Construction

Water well construction, excluding well screen, is measured and paid per linear foot.

The contract price paid for per linear foot for water well construction, excluding well screen, includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work including conductor casing, blank well casing, pitless unit, grouting, sealing centralizers and pipes, up to the distribution connection point and flat work complete in place.

Well Screen

Well screen, is measured and paid per linear foot.

The contract price paid for per linear foot for well screen, includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work including well screen, and gravel pack, complete in place.

Well Development

Water well development; is measured and paid for at lump sum contract price.

The contract lump sum price paid for well development, includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in well development, complete in place, including development tests, cleaning bottom of well, concrete slab, chain link fence, gate, and warning sign.

Well Video

Water well video survey is measured and paid for per linear foot.

The contract price paid for per linear foot for well video, includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in well video.

Testing Well

Testing well is measured and paid for at lump sum contract price.

The contract lump sum price for testing well includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in testing well.

Water Quality Testing

Water quality testing is measured and paid for at lump sum contract price.

The contract lump sum price for water quality testing includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in water quality testing.

10-4.02 WATER WELL EQUIPMENT

PART 1 – GENERAL

Summary

Scope: This work must consist of furnishing and installing water well equipment in accordance with the details shown on the plans and these special provisions.

Water well equipment must include all equipment, accessories, and appurtenances necessary for the complete installation and operation of water well.

Related Work:

Drilling, completing, and developing a water well must conform to the provisions in "Water Well," of these special provisions.

Piping, fittings, and valves must conform to the provisions in "Pipes, Fittings, Valves, and Appurtenances," of these special provisions.

Angle iron, steel supports, and other miscellaneous metals required for water well equipment must conform to the provisions in Section 75-1.02, "Miscellaneous Iron and Steel," of the Standard Specifications.

Submittals

Product Data: Manufacturer's product data must be submitted for all manufactured materials and equipment. Manufacturer's product data must include name of manufacturer, catalog cuts, size, capacity, finish, all pertinent performance ratings, installation instructions, and identification symbols.

Test Results: Results for pump tests must be delivered to the Engineer within 3 business days of completion of testing.

Closeout Document Submittals: Closeout documents must be furnished for the following equipment prior to completion of the project:

1. Well pump

Each closeout document must contain the following information:

1. Parts list
2. Operating instructions
3. Maintenance instructions
4. Wiring schematics
5. Exact length of installed water level indicator system air tube

Three copies of each closeout document must be submitted in the following manner:

1. One CD containing PDF files
2. Two individual 3-ring binders containing paper copies

Incomplete or inadequate documentation must be returned to the Contractor for correction and resubmittal.

Maintenance Instructions: Additional information packaged with or accompanying the equipment must be delivered to the Engineer at the jobsite. The approved pump curve must be encased between two heat-fused laminated plastic sheets and provided with brass mounting eyelets and attached to the inside of the well pump control panel.

Quality Assurance

Codes, Regulations, and Standards: This work must conform to the California Plumbing Code, 24 CA Code of Regs Pt 5, and the California Water Well Standards.

PART 2 – PRODUCTS

Well Pump:

The well pump must be the submersible well type. The pump bowls, suction bell and discharge case must be stainless steel. The pump diffusers must be thermoplastic or bronze. The pump bowl assembly must have an outside diameter not greater than 5.0 inches.

The pump screens must be stainless steel or non-magnetic material and must have a diameter no larger than the suction bell. All bolts, studs, and nuts used on the pump bowl assembly must be nonmagnetic stainless steel.

The impellers must be glass-filled engineered composite, enclosed type, and must be dynamically balanced. The bowl bearings must be glass-filled engineered composite. The impeller shaft must be stainless steel.

The pump must be capable of pumping water, under test, at the flow rates and the total heads shown on the plans. The pump must not load the motor beyond the nameplate rating multiplied by the service factor, at any point on the pump curve.

The motor must be a solid shaft, induction motor, and must be designed for continuous duty underwater operation. Horsepower rating, voltage, phase, and RPM must be as shown on the plans.

The submersible cable must consist of 3 No. 6 AWG insulated copper conductors and 1 No. 6 AWG copper ground.

The submersible cable must be jacketed. The jacket material must be oil and water resistant synthetic rubber or other suitable mechanically protective material.

The cable must be supported from the column with nylon straps at 10-foot intervals. All cable fittings and terminals must be watertight for the water pressure encountered. The splice at the well pump motor leads must be made with the motor manufacturer's recommended heat shrink splice kit. Electrical tape will not be allowed.

The conductors must be protected by a stainless steel guard where they pass the pump bowls.

The cable must be continuous without splices between the wellhead junction box and the well pump motor leads.

Well Accessories:

Check valves in discharge column must be silent spring loaded type, threaded bronze body, nylon or Teflon disc, stainless steel helical spring and shaft, Class 125 and same size as pipe in which installed. Check valves in discharge column must be designed to operate in the vertical position.

Water meter must be disc or turbine type conforming to the requirements in AWWA C 700 or C 701, suitable for water service, and must have a magnetic coupling and a minimum 125 psi working pressure. Readout must be in gallons.

PART 3 – EXECUTION

Installation

The Contractor must verify pump rotation prior to installing the well pump.

The well pump must be installed at the elevation approved by Engineer. Install check valve immediately above the well pump and at 100–foot increments.

Testing

After the installation work has been completed, the pumping installation must be tested for conformance with the operating conditions shown on the plans. The materials and labor required for testing must be provided at Contractor's expense.

Before starting or operating equipment or systems, they must be flushed and cleaned.

The Engineer must be notified at least 3 business days in advance of starting the testing.

The measurements of flow must be by means of venturi meter, a weir, or other reliable means as approved by the Engineer. Excess water must be disposed of into the storm water system in such a manner as to cause minimal erosion.

Valves must be adjusted and the pump operated at no flow, full flow, and the flow rates specified on the plans. The following information must be tabulated and submitted by the Contractor for each test:

1. Flow rate in gallons per minute
2. Pumping water level in the well for the well pump in feet of water
3. Discharge pressure for the well pump in psi, measured at the wellhead
4. Total dynamic head
5. Current reading of the pump motor in amperes
6. Motor voltage (loaded and unloaded)

The water well equipment must then be operated and checked by the Contractor for 8-hour periods for 3 consecutive business days to demonstrate the satisfactory overall operation. The test must be conducted in the presence of the Engineer. The Engineer must be notified at least 3 business days in advance of the operational test.

Any equipment, systems, or work found deficient during the test must be replaced or repaired and retested. The Engineer must be notified a least 3 business days in advance of starting the retest.

MEASUREMENT AND PAYMENT

Water well equipment is measured and paid for at lump sum contract price.

The contract lump sum price paid for water well equipment must include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing water well equipment, complete in place, including equipment, pipe, fittings, valves, and miscellaneous metal as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-4.03 PIPES, FITTINGS, VALVES, AND APPURTENANCES

PART 1 – GENERAL

SUMMARY

Scope: This work must consist of furnishing and installing a water distribution equipment in conformance with the details shown on the plans and of these special provisions. The water distribution equipment must include all equipment and accessories necessary for the complete installation and operation of the system.

Related Work:

Excavation, trenching, and backfill must conform to the provisions in Section 19, "Earthwork," of the Standard Specifications and these special provisions..

Angle iron, steel supports, and other miscellaneous metals must conform to the provisions in Section 75 "Miscellaneous Metal," of the Standard Specifications and these special provisions.

SUBMITTALS

Product Data: Manufacturer's product data must be submitted for all manufactured materials and equipment. Manufacturer's product data must include name of manufacturer, catalog cuts, size, capacity, finish, all pertinent performance ratings, installation instructions, and identification symbols.

Working Drawings: Working drawings showing complete layout and installation details of all equipment and materials must be submitted.

Test Results: Test results for pumps, piping and water samples must be delivered to the Engineer within 3 business days of completion of testing.

Closeout Document Submittals:

Closeout documents must be furnished for the following equipment prior to completion of the project:

1. Water meter
2. Valves
3. Pipes and Fittings

Each closeout document must contain the following information:

1. Parts list
2. Installation Instructions
3. Operating instructions
4. Maintenance instructions
5. Wiring schematics

Closeout documents must be submitted in the following manner:

1. One CD containing PDF files.
2. Two individual 3-ring binders containing paper copies.

Incomplete or inadequate documentation must be returned to the Contractor for correction and resubmittal.

QUALITY ASSURANCE

Codes, Regulations, and Standards: The water distribution system must conform to the California Waterworks Standards, 22 CA Code of Regs §§ 64551-64604, and the California Plumbing Code, 24 CA Code of Regs Pt 5.

PART 2 – PRODUCTS

PIPE AND FITTINGS

Galvanized steel pipe [GSP]: GSP must be Schedule 40 conforming with the requirements in ASTM A 53/A 53M, with Class 150 galvanized malleable iron screwed fittings and galvanized steel couplings. The weight of the zinc coating must be not less than 90 percent of that specified in ASTM A 53/A 53M.

PVC (less than 4-inch Diameter) Pipe: PVC pipe and fittings must be Schedule 80 conforming to the requirements in ASTM D 1785. Pipe must have bell ends conforming to the requirements in ASTM D 3139, or may be plain end with solvent welded couplings and fittings conforming with the requirements in ASTM D 2466 or D 2467.

PVC (4-inch or greater Diameter) Pipe: PVC pipe and fittings must have bell ends conforming with the requirements in ANSI/AWWA C 900, Class 200, DR 14, and NSF 61 for potable water applications. Pipe bell end must have a solid cross section elastomeric ring conforming to the requirements in ASTM D 3139 and F 477. Fittings must be rubber-gasket, push-on joint conforming to the requirements of ASTM D 1784.

Unions (for GSP): Unions must be Class 250, conforming with the requirements in ASTM B 16.39, galvanized threaded malleable iron, ground joint, and brass to iron seat.

Insulating Union: Insulating union must be threaded or flange as applicable and suitable for the service on which used. Connections must ensure the two pipes being connected are completely insulated from each other with no metal-to-metal contact. Insulating couplings will not be allowed.

Flexible Coupling Flexible coupling must be gasketed short sleeve type consisting of a mild steel middle ring with pipe stop, two rubber compound wedge-section ring gaskets, two mild steel follower rings and a sufficient number of galvanized steel bolts to compress the gaskets. All ferrous metal parts of the coupling must be hot-dip galvanized after fabrication.

VALVES

Ball Valve: Ball valve must be two-piece, minimum 400 psi WOG, brass or bronze body with chrome plated ball and full port. Ball valve must have reinforced PTFE seats and seals. Stainless steel body and trim is acceptable.

Check Valve (less than 4-inch): Check valve must be Class 150, silent spring loaded type, threaded bronze body, nylon or PTFE disc, and stainless steel helical spring and shaft.

MISCELLANEOUS EQUIPMENT

Pressure Gauge: Pressure gauge must be Grade A, 2 1/2-inch dial, liquid filled, plain case, reset screw, and bottom inlet gauge conforming with the requirements in ANSI B40.100. Gauge must read from 0 psi to 150 psi. Each pressure gauge must be equipped with a gauge cock and snubber valve.

Water Meter: Water meter must be disc or turbine type conforming to the requirements in AWWA C 700 or C 701, suitable for water service, and must have a magnetic coupling and a minimum 125 psi working pressure. Readout must be in gallons.

Strainer: Strainer must be wye pattern, cast iron body with a Type 304 stainless steel or Monel strainer screen. The strainer screen must be 20 mesh woven wire or perforated type with 0.045-inch maximum diameter perforations.

Meter Box: Meter box must be H-20 traffic rated, precast concrete box with a cast iron cover with no holes. Cover must be factory marked "WATER," or "WATER METER" where appropriate. Provide manufacturer's extensions as required.

PART 3 – EXECUTION

INSTALLATION

PIPE AND FITTINGS

Pipe and Fittings: Pipe and fitting materials must be installed as shown on the plans.
Installing Piping:

Water piping must be installed level, and free of traps and bends.

Pipe Joints and Connections:

Joints in threaded pipe must be made with a PTFE tape or a pipe joint compound that is non-hardening and non-corrosive, placed on the pipe threads and not in the fittings.
The use of thread cement or caulking on threaded joints will not be allowed. Threaded joints must be made watertight. Leaky joints must be remade with new material.

Cleaning and Closing Pipe: The interior of all pipes must be clean before installation. All openings must be capped or plugged as soon as the pipe is installed to prevent the entrance of any materials. The caps or plugs must remain in place until their removal is necessary for completion of the installation.

Securing Pipe: Pipes must be securely supported and braced to prevent swaying, sagging or flexing of joints. Pipe must be held in place by construction channel, pipe rests, anchors, sway braces, bore spacers, or guides. Material for supports must be compatible with the piping, or neoprene isolators must be used. Allowances must be made for expansion and contraction. Above ground steel and copper pipe must have vertical pipes must be supported with commercial-grade clamps or straps.

Supports:

Supports must be selected to withstand all conditions of loading to which the piping and associated equipment may be subjected and within the manufacturer's load ratings. Supports must be spaced and distributed so as to avoid load concentrations and to minimize the loading effect.
Supports must be sized to fit the outside diameter of pipe or pipe insulation.

Thrust Blocks:

Thrust blocks must be sized to conform to the requirements in the CPC. Thrust blocks must be formed by pouring concrete between the pipe and trench wall.
Plastic pipe underground must be provided with thrust blocks and clamps at changes in direction of piping, connections or branches from mains 2 inches and larger, and all capped connections.

Water Pipe near Sewers:

Water pipes must not be installed closer than 10 feet to any parallel sewers.
Water lines must cross above a sewer line, with a vertical separation of not less than 12 inches. The measurement must be maintained taken between the top of the sewer and the bottom of the water pipe.

VALVES

Valves below ground must be installed in a valve or meter box. Valves must be installed with a minimum of 6 inches of free draining granular material in valve or meter box..

Valves above ground must have a pipe support installed adjacent to the valve.

MISCELLANEOUS EQUIPMENT

Water Meter:

Water meters installed below ground must be installed in a meter box. Meters must be installed on a minimum of 6 inches of free draining granular material.

Meter Box:

Meter box must be installed to finish grade. Extensions must be installed as required.
A reinforced concrete collar must be formed and cast-in-place around each meter box. Collars must be broom surface finished or must match the surrounding surface texture.
Meter boxes that are to be installed in areas to be paved or surfaced must not be placed to final grade until the paving or surfacing has been completed in the indicated area.

TESTING

Pipe and Fittings:

All piping must be tested after assembly and prior to backfill. In addition to the requirements in the CPC, the Contractor must test the water piping for a period of not less than 4 hours, at a pressure of 125 psi. Piping must remain watertight.

The Contractor must take precautions to prevent damage to gauges, and appurtenances. The Contractor must repair damage resulting from or caused by testing pipes.

After testing, the Contractor must repair all leaks and retest to determine that leaks have been stopped. Excess potable water must be disposed of into the storm water system in such a manner as to cause minimal erosion.

OPERATIONAL TEST

Equipment or work found deficient during the test must be calibrated, repaired, or replaced, and then re-tested. The Engineer must be notified at least 3 business days in advance of re-testing.

MEASUREMENT AND PAYMENT

Full compensation for pipes, fittings, valves, and appurtenances is included in the contract lump sum price paid for well equipment and no additional compensation will be allowed therefore.

BID ITEM LIST

10-415804

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
1	070012	PROGRESS SCHEDULE (CRITICAL PATH METHOD)	LS	LUMP SUM	LUMP SUM	
2	070018	TIME-RELATED OVERHEAD	WDAY	560		
3	071325	TEMPORARY FENCE (TYPE ESA)	LF	1,560		
4	074016	CONSTRUCTION SITE MANAGEMENT	LS	LUMP SUM	LUMP SUM	
5	074019	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	LUMP SUM	LUMP SUM	
6	074028	TEMPORARY FIBER ROLL	LF	101,000		
7	074029	TEMPORARY SILT FENCE	LF	75,400		
8	074032	TEMPORARY CONCRETE WASHOUT FACILITY	EA	16		
9	074033	TEMPORARY CONSTRUCTION ENTRANCE	EA	16		
10	074037	MOVE-IN/MOVE-OUT (TEMPORARY EROSION CONTROL)	EA	16		
11	074038	TEMPORARY DRAINAGE INLET PROTECTION	EA	110		
12	074040	TEMPORARY HYDRAULIC MULCH (BONDED FIBER MATRIX)	SQYD	980,000		
13	074041	STREET SWEEPING	LS	LUMP SUM	LUMP SUM	
14	074057	STORM WATER ANNUAL REPORT	EA	3	2,000	6,000
15	074058	STORM WATER SAMPLING AND ANALYSIS DAY	EA	1		
16	074059	WATER QUALITY ANNUAL REPORT	EA	3		
17	074060	MONTHLY MONITORING REPORT	EA	1		
18	120090	CONSTRUCTION AREA SIGNS	LS	LUMP SUM	LUMP SUM	
19	120100	TRAFFIC CONTROL SYSTEM	LS	LUMP SUM	LUMP SUM	
20	120120	TYPE III BARRICADE	EA	270		

REVISED PER ADDENDUM NO. 2 DATED MAY 9, 2012

BID ITEM LIST

10-415804

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
81	401050	JOINTED PLAIN CONCRETE PAVEMENT	CY	12,100		
82	401081	SHOULDER RUMBLE STRIP (CONCRETE PAVEMENT, ROLLED-IN INDENTATIONS)	STA	400		
83	401083	SHOULDER RUMBLE STRIP (CONCRETE PAVEMENT, GROUND-IN INDENTATIONS)	STA	8		
84	404092	SEAL PAVEMENT JOINT	LF	252,000		
85	404093	SEAL ISOLATION JOINT	LF	3,620		
86	043215	FURNISH PILING (CLASS 90) (ALTERNATIVE X)	LF	1,069		
87	043216	DRIVE PILE (CLASS 90) (ALTERNATIVE X)	EA	44		
88	043217	FURNISH PILING (CLASS 140) (ALTERNATIVE X)	LF	4,072		
89	043218	DRIVE PILE (CLASS 140) (ALTERNATIVE X)	EA	112		
90	043219	FURNISH 15" PRECAST PRESTRESSED CONCRETEPILING	LF	1,631		
91	499057	DRIVE 15" PRECAST PRESTRESSED CONCRETE PILE	EA	50		
92	500001	PRESTRESSING CAST-IN-PLACE CONCRETE	LS	LUMP SUM	LUMP SUM	
93	510051	STRUCTURAL CONCRETE, BRIDGE FOOTING	CY	299		
94	510053	STRUCTURAL CONCRETE, BRIDGE	CY	3,596		
95 (F)	510086	STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N)	CY	498		
96 (F)	021079	STRUCTURAL CONCRETE, WINGWALL	CY	54		
97 (F)	510090	STRUCTURAL CONCRETE, BOX CULVERT	CY	178		
98 (F)	510502	MINOR CONCRETE (MINOR STRUCTURE)	CY	158		
99 (F)	043221	COBBLESTONE TEXTURE	SQFT	360		
100	519081	JOINT SEAL (MR 1/2")	LF	472		

REVISED PER ADDENDUM NO. 2 DATED MAY 9, 2012

BID ITEM LIST

10-415804

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
181	860933	TRAFFIC MONITORING STATION (LOCATION 3)	LS	LUMP SUM	LUMP SUM	
182	860934	TRAFFIC MONITORING STATION (LOCATION 4)	LS	LUMP SUM	LUMP SUM	
183	860935	TRAFFIC MONITORING STATION (LOCATION 5)	LS	LUMP SUM	LUMP SUM	
184	860936	TRAFFIC MONITORING STATION (LOCATION 6)	LS	LUMP SUM	LUMP SUM	
185	860937	TRAFFIC MONITORING STATION (LOCATION 7)	LS	LUMP SUM	LUMP SUM	
186	860938	TRAFFIC MONITORING STATION (LOCATION 8)	LS	LUMP SUM	LUMP SUM	
187	021083	CLOSED CIRCUIT TELEVISION SYSTEM (LOCATION 1)	LS	LUMP SUM	LUMP SUM	
188	021084	CLOSED CIRCUIT TELEVISION SYSTEM (LOCATION 2)	LS	LUMP SUM	LUMP SUM	
189	021085	WEATHER MONITORING STATION	LS	LUMP SUM	LUMP SUM	
190	861503	MODIFY LIGHTING	LS	LUMP SUM	LUMP SUM	
191	021086	FIBER OPTIC SYSTEM	LS	LUMP SUM	LUMP SUM	
192	BLANK					
193	200001	HIGHWAY PLANTING	LS	LUMP SUM	LUMP SUM	
194	208000	IRRIGATION SYSTEM	LS	LUMP SUM	LUMP SUM	
195	204099	PLANT ESTABLISHMENT WORK	LS	LUMP SUM	LUMP SUM	
196	208310	IRRIGATION SLEEVE	LF	290		
197	760011	WELL DEVELOPMENT	LS	LUMP SUM	LUMP SUM	
198	760012	TESTING WELL	LS	LUMP SUM	LUMP SUM	
199	023777	WELL INVESTIGATION	LF	310		
200	023778	WATER WELL CONSTRUCTION	LF	310		

BID ITEM LIST

10-415804

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
201	023779	WELL VIDEO	LF	310		
202	023780	WATER QUALITY TESTING	LS	LUMP SUM	LUMP SUM	
203	023781	WATER WELL EQUIPMENT	LS	LUMP SUM	LUMP SUM	
204	760035	WELL SCREEN	LF	79		
205	023782	WELL PUMP ELECTRICAL SYSTEM	LS	LUMP SUM	LUMP SUM	
206	400050	CONTINUOUSLY REINFORCED CONC. PAVEMENT	CY	66,700		
207	400062	CRCP (TERMINAL JOINT TYPE B)	LF	72		
208	400075	CRCP (PAVEMENT ANCHOR)	LF	920		
209	400090	CRCP (EXPANSION JOINT, TYPE AN)	LF	380		
210	519091	JOINT SEAL (MR 1 1/2")	LF	380		
211	999990	MOBILIZATION	LS	LUMP SUM	LUMP SUM	

TOTAL BID: $ _____

ADDED PER ADDENDUM NO.2 DATED MAY 9, 2012